

ELEPHONE: CENTRAL 3617 ELEGRAMS: "CHEMICUS. ANNON, LONDON" (2 Words)

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SUBSCRIPTION (WITH DIARY) 20/- PER ANNUM SINGLE COPIES 9d.

Vol. CIX.

28, 1928.

PROFITS

OF



Extract of Malt & Cod-Liver Oil

and avoid price cutting

REDUCTION WHOLESALE PRICES

(No reduction in selling prices)

On the P.A.T.A.

1 lbs.

1 lbs.

2 lbs.

4 lbs.

7 lbs.

7/4=

11/-

19/6

36/6

61/9

Write for special Contract Prices

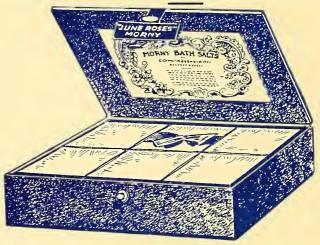
ALLEN & HANBURYS Ltd., Bethnal Green, London, E. 2

A NEW PRESENTATION.

## MORNY TH SALTS TABLE

BATH SALTS TABLETS

CARTONS OF SIX TABLETS



During the summer, the demand for Bath Salts Tablets is at its highest point, and with the new presentation illustrated above this valuable business will be widely stimulated.

The Tablets, standard in every way, are issued in brown antique leatherette cartons exactly similar in design to the well-known carton of twelve tablets, and are obtainable in the following fragrances:—

"CHAMINADE " "MYSTÉRIEUSE " )	Minimum Retail in Gt. Britain.
"NUIT DE CARNAVAL"	2/3
"TRIOMPHE" or ASSORTED	2/0
"FANTAISIE" "JUNE ROSES" "SÉRÉNADE"	1/9
"VIOLETTE-MORNY " "YESHA" etc	1/9
EAU DE COLOGNE, LAVENDER or	1/6
"ROSE-VERVEINE"	1/0
Subject to usual Terms.	

A SUPERLATIVE PRODUCT.

Apply for full Price List and Terms to:-

MORNY FRÈRES, 6 NEW BURLINGTON LIMITED, 6 STREET, LONDON, W.1

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A TOWN

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## Does the "Retail" tend to produce some Micawbers?

There is a real danger attached to the fact that a fair amount of business just walks into the average Pharmacy.

If every sale had to be sought and won, the oft-times unconscious attitude of waiting for Customers to *turn up* would entirely disappear.

Throughout Twenty years of steady expansion

## "THE WIGGLESWORTH WAY"

has persistently heard about trade being bad and money scarce, as well as the suggestion that to be "holding-your-own" is a privilege and a cause for gratitude.

Any business that is too sensitive to trade slumps or tight purse strings lacks selling energy. Window sales need checking and Counter sales, too.

If you are already doing this, we have one or two Summer lines which will interest you. They are making many extra sales, new Customers and of course very healthy profits. A postcard will suffice.

## WIGGLESWORTH LTD.

WESTHOUGHTON LANCS.

## Special Discount Offer

(Bathing and Dancing Season)

OPEN TILL AUG. 31, 1928

Every customer will be entitled to place one order for VEET any time prior to 31st August, 1928, and receive on such order an

## Extra Discount of 10%

Under this offer VEET may be obtained on the following exceptionally generous terms:

33\frac{1}{3}\% Trade Discount

10% SPECIAL SEASONAL DISCOUNT.

5% Cash Discount.

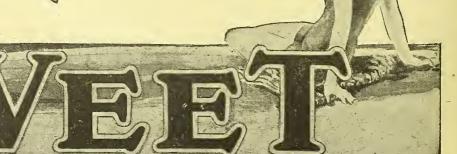
PLUS ONE FREE TUBE PER DOZ.

One order only from each customer will be executed upon this basis. Orders must be for not less than 3 dozen tubes (either the 1/6 size, the 3/- size, or assorted sizes). The maximum order accepted on this basis will be for £10 at trade prices. No order will be executed on this extra discount basis if post-

marked later than 31st August, 1928.

DAE HEALTH LABORATORIES LTD. 68, Bolsover Street, London, W.I.

This OFFER returns
90 per cent. PROFIT
on your investment



## A CAUTION

## INVEST YOUR MONEY ONLY IN ARTICLES OF KNOWN REPUTATION AND WITH A READY SALE

It is easy to make airy promises of advertising and sales to come, and to urge the laying in of stock to meet a demand yet unborn. We offer you tangible business—

## VEET

## is "the biggest-selling depilatory"

Veet is the most widely used hair-removing preparation in the world and has by far the largest sale.

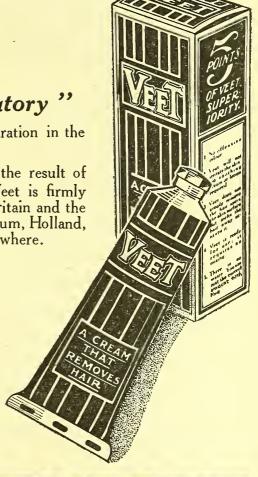
Veet is a British Product of British quality. As the result of six years' steady advertising and proven merit Veet is firmly entrenched in the public confidence, not only in Britain and the Empire, but also on the Continent in France, Belgium, Holland, Sweden, Norway, Italy, Spain, in fact nearly everywhere.

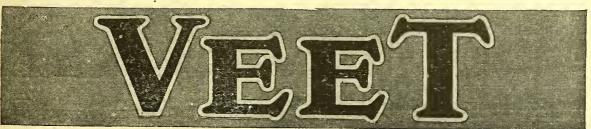
Therefore, rely on Veet and do not worry about something the public have never heard of. Don't lock up cash and load your shelves with a thing you may never be asked for.

Veet advertising is more abundant than ever.

Veet sales are guaranteed.

SEE SPECIAL
SEASONAL DISCOUNT OFFER
ON OPPOSITE PAGE







Corner of StaffAllenS Packing Department

## A little goes a long way

Because of their extreme concentration and easy solubility in dilute alcohol StaffAllenS Terpeneless Oils are greatly appreciated. These oils have perfect keeping properties, and their purity can be readily checked. Each oil is practically colourless, and the odours are greatly superior to those of ordinary essential oils. In relation to their degree of concentration, StaffAllenS Terpeneless Oils are an economical proposition. A little goes a long way. Send your enquiry to Stafford Allen & Sons Ltd., Essential Oil Distillers, Cowper Street, London, E.C.2

## StaffAllenS TERPENELESS OILS

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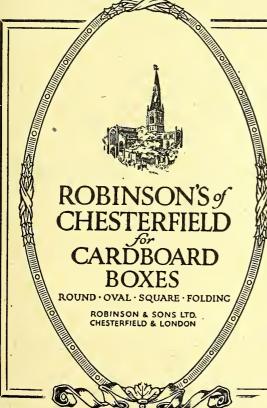
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[Continued overleaf.

#### BEADED **BOXES**

The boxes illustrated above are finding increasing favour amongst chemists. They are dust-proof and air-tight and of a very attractive appearance.

Fitted with a flanged metal lid which is easily lifted out they form a very useful container.

Blank panel on reverse side for printing in Customer's name and address.

## ROBINSON & SONS, Ltd.

ROUND, OVAL, SQUARE AND FOLDING CARDBOARD BOXES,

CHESTERFIELD

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#### BEFORE CONTRACTING

Write to us for Samples & Quotations of



## BUTTERSCOTCH". MALT & OIL



The Unbeatable Quality that will increase your Profits by steady and repeat business.

MADE ONLY BY

C. TOLKIEN & CO., LTD., Malt Extract Makers, SILSDEN, YORKS.

London 'Phone: 3539 FINCHLEY. Silsden 'Phone: 69 STEETON (2 lines). Telegrams: "REMOGEN," SILSDEN.



# quarantees that count

SUPERLATIVE EXCELLENCE, STABILITY & PURITY



## CHEMICAL

PROFITABLE repeat business and satisfaction is ensured when you specialise in "Specialty" Chemical Food.

It is prepared from an original tested formula, and is of a rich brilliant colour and delicious fruity flavour. Guaranteed to be a pure phosphate syrup made from pure cane sugar and free from excess of acidity and the inky flavour usually associated with ordinary Chemical Food.

"Specialty" Chemical Food is supplied either in bulk or packed in various styles. It will pay you to send for samples and prices.



## ANGLO-AMERICAN OIL COMPANY, LTD.

"SPECIALTY" DEPT.

ALBERT STREET, CAMDEN TOWN, LONDON, N.W.1.

Telegrams: "NUFIN | NORWEST, LONDON."

Telephones: HAMPSTEAD 8066-7-8.



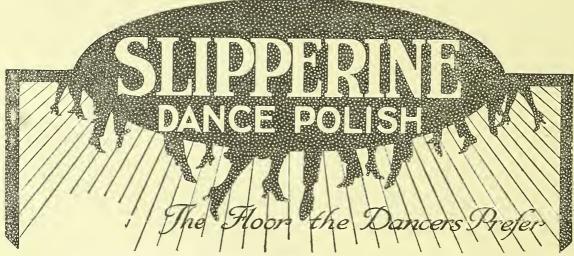
## They never stop for a moment....

—so mother says, and it is the same with the "Roboleine" advertisements; they never stop. Every week in every year we tell the mothers why they should "put them on"

## Roboleine THE FOOD THAT BUILDS THE BODY

Display it in your pharmacy to remind the mothers to buy a jar when they are shopping. Write for generous Window Display Terms.

OPPENHEIMER SON & CO. LTD. 179 QUEEN VICTORIA STREET, LONDON, E.C.4.



STOCK THE P.A.T.A. LINE THAT IS ASKED FOR.

DECORATED TINS. 1/6 size at 12/- dozen Unc

2/6 ,, ,, 20/- ,, P.A.T.A.

10/6 7 lb., 96/- , SINGLE STANDARD CASES. CARRIAGE PAID.

Under £3, nett one month; £3, less 2½% one month; £6, less 5% one month.

Carriage Paid £3.

Cases free,

STRIKING SHOW MATERIAL.

Nett Cash.

DITTOLL D	THIDNIE OF	DLD. CHILL	MOL IMID.		_	ver casiv.			
Case	1/6	2/6	Cash	Case	1/6	2/6	10/6	Cash	
A	24	_	24/-	D		_	• 4	32/-	ì
_ B	12	6	22/-	H	12	_	1	20/-	
C	12	12	32/-	J	<b>—</b>	9	2	31/-	
G	-	18	39/-	K	6	6	2	_32/-	ı

Distributors for England and Irish Free State:
A. de ST. DALMAS & CO., LTD.,
Leicester, London and Dublin

Makers:

JOHNSTON & ADAMS, Dundee, Scotland
Export: WM. C. RUDKIN & CO., 44 King William Street, E.C.

Sig Cash Prizes FOR NEW-MIX Window Displays

SEND THE PHOTOGRAPH
OF YOUR WINDOW

DISPLAY IN AT ONCE

Many hundreds of chemists have entered for the New-Mix window display competition, inasmuch as they have been supplied with the window display matter and have given over their window to New-Mix for the necessary fortnight.

Many, however, have not sent us a photograph of their window show—an essential procedure if they are to participate in the Big Cash Prizes to be awarded, and we would urge them to send us this photograph AT ONCE. Do not delay.

The First Prize of £100 will be awarded to the chemist making the best Window Display, to be decided from a photograph of the window to be supplied by the chemist. The decision of the Directors of Gilmont Products, Limited, to be final. Size of window does not necessarily mean a better window. A small window arranged in a meritorious and attractive manner will stand an equal chance of winning a prize.

The Second Prize of £50 will be awarded to the chemist with the next best Window Display.

"THE GLEAM OF YOUTH
ON EVERY TOOTH."

GILMONT PRODUCTS, Ltd.
35 CRUTCHED FRIARS, LONDON, E.C.3



## HITAKER

## **Jubilee Window Display Competition**

E have now received from the Judges a full report and list of prize winners in the above Competition. As previously announced, the judging was very kindly carried out on our behalf by the following gentlemen, members of the British Association of Display Men, of II Berkeley St., W.I:

Mr. ERNEST WILLSON, Display Manager of Messrs. Kodak, Ltd., and past President of the B.A.D.M. Mr. W. G. ROWE. Display Manager of Messrs. Dickins & Jones, Ltd. Mr. F. C. LAWRENCE, Sccretary of the B.A.D.M.

We heartily congratulate the successful entrants, and we feel sure that it will add to their gratification to

learn that they were "up against" a very stiff proposition. We also wish to record our high appreciation of the splendid efforts displayed by all competitors.

The following are extracts from the Judges' report:

"The work of judging has been extremely difficult, because there were so many displays of distinct merit. The com-

petitors generally are to be complimented on what could be considered a very excellent standard of display.

"We would like to congratulate the contestants on the splendid work they did, and also Messrs. Whitaker & Co. for their enterprise in conducting this competition, which, while being a co-operative effort of equal advantage to the manufacturer and retailer, is also of great benefit to all retailers and the public as a whole. Such contests invariably create a greater and more sustained interest in window displays generally, which, as all are agreed, is good for commerce."

We consider this very successful feature of our Jubilee Programme to be yet another indication of the cooperation existing between the House of Whitaker and its customers throughout our 50 years of Business Life.

We remind our Customers of our

#### SPECIAL JUBILEE **TERMS & DISCOUNTS**

FOR"LUTON" STRAW HAT DYES AURORAL COLD WATER DYES "LUTON" **FABRIC** DYES VELT, THE NEW CLEANER and other Whitaker products.

Full details are in our Trade Booklets.

#### WRITE TO-DAY.

If you are not yet stocking these Profitable Products write to-day for a full list and special Trade Offers.

## RESTI

### First 100 GUINEAS Prize

Mr. F. C. STOCK, 25 Whingate Road, Armley,

#### Second 50 GUINEAS Prize

Mr. F. COOPER, 93 Tottenham Lane, Hornsey, London, N.8.

### Third 25 GUINEAS Prize

Mr. W. T. HIND, Queen's Road, Clarendon Park, Leicester.

### Twenty 5 GUINEA Prizes

- Messrs. Leeds Industrial Co-op. Soc., Ltd., Drug Dept., 6, Albiou Street, Leeds.
   Mr. W. H. Harrison, 129, Barlow Moor Road, Chorlton-cum-Hardy.
   Mr. F. H. Usher, 26, Otley Road, Guiseley, uear Leeds.
   Mr. J. Walker, 46, Ann Street, Greenock.
   Mr. H. A. Martin, 58, Willow Bridge Street, Leicester.
   Miss R. K. Spencer, 62, Easton Street, High Wycombe.
   Mr. J. Benson, 68, Dalton Road, Barrow-in-Furness.
   Messrs. Dobbin & Co., 68, North Street, Belfast, Belfast, Ur. A. C. Bowden, 2, Field End Parade, Eastcote.
   Messrs. Squire & Co., Ltd., 139, St. Leonards

- II.
- 13:

- 16.

- Mr. A. C. Bowden, 2, Field End Parade, Eastcote.

  Messrs. Squire & Co., Ltd., 139, St. Leonards Road, Poplar, London, E.14.
  Messrs. Weston & Co., Ltd., 89, St. Peter's Street, Derby.

  Messrs. W. J. Fisk, Ltd., 35, Bernard Street, Southampton.

  Mr. J. W. Lambert, 226, Oakworth Road, Keighley.

  Messrs. L. W. Mussell, Ltd., 83, Window Lane, Garston, Liverpool.

  Lane, Garston, Liverpool.

  Mr. W. Polglase, Porthleven, Cornwall.

  Messrs. Bennett & Morris, Ltd., 16, Rushey Green, Catford, S.E.6.

  Messrs. Ashton-under-Lyne Co-op. Soc., Ltd., Drug Dept., Areadia, Stamford Street, Ashton-under-Lyne.

  Mr. G. K. Robinson, 26, Bradford Road, Keighley.

  Mr. P. D. Griffin, 60, Cheap Street, Newbury.

#### WHITAKER & CO., Dye Specialists for Chemists, KENDAL Telegrams: "Dullette, Kendal." Telephone: 214. Established 40 years.

London Office 16-18 BEAK STREET, REGENT STREET, W.1 and Showrooms:

Telephone: Regent 3825.

## Maws



## Page

## Maw's Corn and Bunion Plasters

Reliable Sundries Lines with Good Profits

Reference to pages 294 and 295 of our general price-list will show a wide range of Corn and Bunion Plasters from which to order stocks to meet the increased demand which invariably comes at this time of the year.

The House of Maw has been making Corn and Bunion Plasters for many years and justly claims the skill and knowledge of the expert. It supplies millions of corn plasters to the pharmacist each year and its output increases continually.

Maw's Corn and Bunion Plasters are spread with ordinary isinglass solution, self-adhesive rubber plaster or zinc oxide self-adhesive plaster. Zinc Oxide corn and bunion plasters are of comparatively recent introduction. They are manufactured with the greatest care and extraordinary attention is paid to their antiseptic qualities. In addition to their specified uses they will be found beneficial if applied to the foot to prevent abrasions and blisters and the irritation set up by tight shoes. They are comforting to the most tender feet and take action as soon as applied. The pharmacist is strongly urged to recommend Zinc Oxide plasters in preference to ordinary adhesive plasters. They are well worth the slight additional cost.

Maw's Corn and Bunion Plasters are neatly packed in well-made, appropriately labelled boxes. They can be featured on the counter or in the window and can be sold at prices which assure steady sales and a good margin of profit.

S. Maw, Son & Sons, Ltd.,
Aldersgate St., London,
and Barnet.

No.

## Specify

## "Moorland"

and buy an Aspirin Tablet that will provide you with good and consistent profits

If you think the matter over carefully, it will not take you very long to realise that Moorland Aspirin is the brand to specify. The quality is of the very highest and you can be proud to sell such a brand to your customers at a fair and reasonable price which leaves you a very good profit. The sales are increasing daily, therefore, you can buy Moorland Aspirin with confidence, and so create more business for your pharmacy by giving your customers better value for their money.

*	Accept this profitable bonus	offer.	
	Cost:—3 doz. 50's at 10/- doz., including 6 doz. 3d. size FREE $1\frac{1}{2}$ ,, 25's ,, 5/- ,, ,, ,, ,, FREE		
	Sales:—3 doz. 50's at 1/3 each	Total Cost	
	7 ,, 3d. size, which we give you	Total Sales	
	YOUR COST £1-17-6 YOUR PROFIT	£1-19-9	

You give your customers exceptional value with Moorland Aspirin and you ensure good profits for yourself

Display Outers and cut-out showcards with all orders

W. B. CARTWRIGHT LTD. RAWDON LEEDS



JULY 28, 1928



AWARDS-London, 1881. Vienna. 1883. Calcutta. 1884.





## ZINC OXIDE

("Puriss")

Being made by direct combustion of the metal, this Zinc Oxide is beautifully white and light. It tests fully 99.8% and has been known and appreciated by the Drug trade in all parts of the world for nearly half a century.

### ZINC OXIDE

("Puriss Extra")

This oxide tests upwards of 99.96. It is free from iron, etc., and practically chemically pure.

## LYSOL

ANTISEPTIC.

GERMICIDE.

Equal to any Lysol on the Market.

Contains 50% of refined Phenol Derivatives, and has a very much greater germicidal power than Pure Phenol. forming a clear solution with Soft or Distilled Water.

Report on a recent large Government order shipped:

> "Is of exceptional quality and quite free from oil drops when diluted."

In 4 oz. bottles 5/- doz. ,, 8 oz. 9/- ,, " 16 oz. " -15/6" One Gallon tins, free 6/6 each. " 5/10 gall. drums (extra) 5/- gall.

#### H. STEVENSON

Wholesale Druggists and Manufacturing Chemists,

122 Great Suffolk Street, London, S.E.1

## TOILET PREPARATIONS

UNEQUALLED FOR VALUE IN BRILLIANTINES, DRY SHAMPOOS, LOTIONS. FACE CREAMS, ETC.

## JULES FRÉRES LIME CREAM AND GLYCERINE

THE BEST LINE EVER OFFERED TO THE TRADE

CAMEO SERIES



EQUALLY SATISFACTORY IN THE HOTTEST OR COLDEST CLIMATE

#### **PRICES**:

3 oz. Bottles - 3/9 per doz. 4 oz. " - 4/3 " " 6 oz. " - 5/6 " " 8 oz. " - 6/6 " "

SEND FOR ILLUSTRATED CATALOGUE **ECINOS SERIES** 



## JULES FRERES LTD.

(Sole Agents: P. H. GALLOWAY, LTD)

WALWORTH ROAD, LONDON, S.E.17

## A Laboratory Triumph from AYRTON'S



a perfect substitute for OTTO DE ROSE



Whilst the supply of Otto de Rose diminishes, the demand increases from every corner of the world, and Ayrton's Chemists have addressed themselves to the subject with some remarkable results.

A highly concentrated Synthetic Otto de Rose has been perfected, and is now available to the trade only under the name of "ROSOTTOS."

The recommended dilution is five drops of "ROSOTTOS" to one pint of water, and the combination results in a perfect substitute for Aqua Rosæ.

Those who find use for rose perfume in putting up their own Counter Specialities and Toilet Preparations are recommended to investigate "ROSOTTOS" both from a point of economy and also of satisfactory results.

Real Rose Odour.

Ideal for Toilet Preparations.



"Rosottos" (Registered) 10/6 per oz.

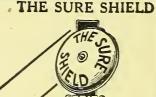
Producing 12 gallons of Perfect Rose Water.

Sample sent to any Trading Chemist on request.

AYRTON, SAUNDERS & CO., LTD., 34 HANOVER STREET - - - LIVERPOOL.

LONDON DEPOT: 1 SWAN STREET, MINORIES, E.1

Telephone: ROYAL 8111.



BRAND

IODISED THROAT TABLETS



 $8\frac{1}{2}$ d. Tins 5/6 per doz. 63/= per gross

1s. 3d. Tins

9/6 per doz.

108/- per gross

THOS. GUEST & CO., LTD., CARRUTHERS STREET, ANCOATS, MANCHESTER.

## RIDGE'S

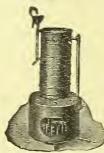
for Infants and Invalids

WELL ADVERTISED to the GENERAL PUBLIC.

SAMPLES, ADVERTISING MATTER and SPECIAL DISPLAY TERMS ON APPLICATION TO:

ROYAL FOOD MILLS, LONDON, N.16

### DISTILLED WATER



Brown's Stills are perfectly automatic. Can be run night and day without attention, Patented in U.K. and Continental Countries.

Extraordinarily efficient and economical. Made for gas, steam, oil or coke fire heating.

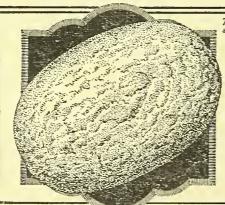
Full particulars and prices free on application

RDOWN & CON

BROWN & SON,

Alembic Works,

Wedmore Street, Holloway, N.19



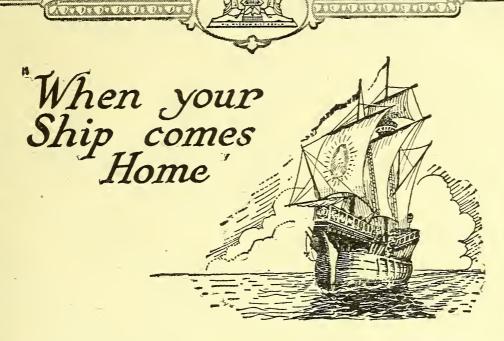
Two thirds

## Bath Rusks

Unsolicited testimonials daily for Carr's famous Bath Rusks which are ideal for babies and young children. Scores of letters from grateful mothers. Recommended everywhere.

CARR'S of Carlisle

The Oldest House in the Trade



A FASCINATING IDEA opening up attractive vistas for all of us! But the Chemist who displays and recommends goods which are on sale at nearly every other shop in the street will find the idea merely a dream.

• To convert the dream into reality, concentrate on products which the grocer and miscellaneous dealer cannot handle.

As far as salines are concerned, for example, it is a sound business policy to specialise in "MINERAL SPRING"—
"The Chemists' Own Effervescible," not supplied to the grocery trade. It will build up your own goodwill.

## MINERAL SPRING EFFERVESCENT HEALTH GRANULES

To EXPORT BUYERS—All orders and enquiries should be addressed to our Sole Export Agents Wm. ALFRED JONES Ltd., West India House, Liverpool.

THOMAS KERFOOT & COLON BARDSLEY VALE, LANCASHIRE, & Bardsley House, London, N.1 ESTABLISHED 1797.

C/568

COPYRIGHT

## DEARBORN (1923) LTD.

37 Gray's Inn Road, London, W.C.1

Toilet Specialties. Price to Retain	oz, Price
PILENTA SOAP 10/	
A complexion soap. PROLACTUM 10/	- 1/-
For the lips.  PARSIDIUM JELLY For wrinkles.  10/	- 1/-
ALLACITE OF ORANGE	
BLOSSOM 22/	6 2/6
BORANIUM 22/	6 2/6
CLEMINITE 22/	6 2/6
COLLIANDUM 22/	6 2/6
PERGOL 22/	6 2/6
TEKKO PASTE 22/	6 2/6
STALLAX (13/	
For a shampoo. \\22/\ JETTALINE	,
For clearing the skin.  PHEMINOL 36/	- 4/-
MENNALINE 36/	- 4/-
MERCOLIZED WAX A face cream. \( \begin{array}{c} 18/\ 31/ \end{array} \]	
STYMOL 36/	- 4/-
For oily complexions and blackheads SILMERINE	
BARSYDE 22/	6 2/6
TAMMALITE 22/	6 2/6
LIQUID PERGOL 31/ To check excessive perspiration local	6 3/6
BICROLIUM	6 2/6
COCONOIDS 31/	6 3/6
SIPOLITE 18/	- 2/-

#### The Products of

#### Messrs. PARKER, BELMONT & CO.

MC3313. I ARRIVER, DEL	IVI	AT OC	co.
CLYNOL BERRIES For obesity.	• •	36/-	4/-
SOFT PALERIUM For wrinkles.		45/-	5/-
LIQUID NAIL POLISH Brilliant and lasting	••	10/-	1/-

Stocked by ALL Wholesale Houses.

#### FOREIGN AND COLONIAL DEPOTS AND AGENCIES.

South Africa: LENNON, LTD., Cape Town. etc.
SIVE, BROS. & KARNOVSKY, LTD.,
10 dia: FRAMJEE & SON, Bombay.
A. L. CHOUDRY, Calcutta.

New Zealand: SHARLAND & CO., Auckland and Welliugton, Holland: N. V. v/h HENRI SANDERS, Amsterdam. I èrmark: KARL SCHULTZ & CO., Copenhagen.

Sweden: ENEQUIST HOLME & CO., A/B, Stockholm.

Irish Free State: MAY, ROBERTS & CO., LTD., Dublin.

## Your Customers are being told about

of a place of a place



## The French perfumed Depilatory

National advertising is now appearing in daily and weekly Journals of large circulation having a wide-spread and popular appeal to women.

TAKY is in a double-sized tube retailing at 1/6.

TAKY, the famous French Depilatory, is delicately perfumed.

TAKY is extraordinarily quick, effective and safe in action.

## Generous Introductory Offer

Parcel A. 3-doz. TAKY tubes (14 to the doz.) 18/- per doz. (Less 33\frac{1}{3}\% and an extra 5\%.) Carriage paid.

Parcel B. 1½-doz. TAKY tubes (14 to the doz.) 18/- per doz. (Less 33½%.) Carriage paid.

### Exchange Old Stock Now

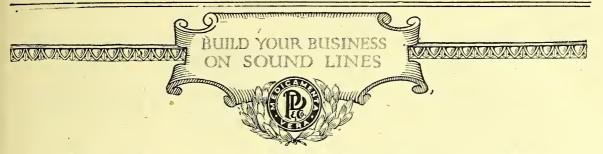
If you act quickly we will exchange your old 2/6 stock on our new price basis, providing you order, at the same time, at least a "B" parcel.

Get your Wholesaler to supply you on the above terms; or write for full particulars to the sole distributors:—

### PENNEY & CO., LTD.

16/18 BEAK ST., REGENT ST., W.1
Telephone: REGENT 3825.

THEN



## Euthymol Displays Pay

S it grows older, Euthymol grows more popular. Although it has been on the market for over 30 years, it is steadily gaining more and more friends amongst the public. Newspaper, magazine and poster advertising for Euthymol-sound, sincere, truthful publicity-is continuous and widespread. Such advertising has helped, and will help, to induce people to try Euthymol, but it is the merit of this dentifrice that turns the first sale into the many.

The public are buying Euthymol freely. It is worth while to show them that you sell it. Display this scientific dentifrice, and give it the word of commendation it deserves; you will not regret your support.

There is no "dead stock" question with Euthymol. It sells steadily, and you secure a comfortable profit with each sale and the repeat orders that follow. We have special quantity terms for registered chemists. Have you investigated them yet?

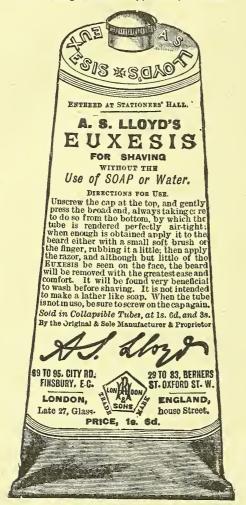
Kills Dental Decay Germs within 30 seconds. M.R.P. 1/3 per tube. M.W.P. 10/2 per doz. net



## A. S. LLOYD'S EUXESIS

(THE GENUINE).

For Shaving without Soap, Water, or Brush.



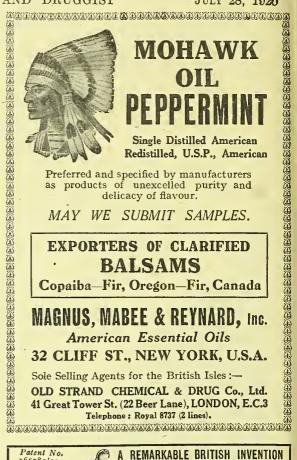
Sold by all Perfumers and Chemists throughout the world.

R. HOVENDEN & SONS having purchased, under an administration suit, the business of the late A. S. LLOYD, with the Receipt, Trade-Mark, and Goodwill of the celebrated Euxesis, the Trade are cautioned that the original and genuine Euxesis is now manufactured at our Factory ONLY and may be obtained at either of our Warehouses.

#### PRICES ON APPLICATION.

NOTICE.—THE GENUINE A. S. LLOYD'S EUXESIS bears a label printed in BLACK only on a Yellow ground, with our Trade Mark at the bottom, as Illustration.

Proprietors: R. HOVENDEN & SONS, LTD. LONDON: 29-33 Berners Street, W.J; and 89-95 City Road, E.C.1.





A REMARKABLE BRITISH INVENTION

### "SPIRC

SAFETY RAZOR BLADE SHARPENER

Every user of the "Watts" Safety Razor Blades is a potential purchaser. STRONG AND SIMPLE

No troublesome fixing. Drop blade on two pegs, close box, turn handle and =get a super-keen blade in a moment.=

Retails at 21/- each. Snitable for any Gillette Type or Watts Auto Strop Type Blades.

Allowing 50% profit on cost for the dealer.

Sole Manufacturer JOHN WATTS, Lambert Works, SHEFFIELD, London Office & Showroom: 18 Soho Square, W.1. 'Phone: Gerrard 1306



WINCED DENTAL PLATE



BRUSH WORKS, HERTFORD ENGLAND.

## A. S. LLOYD'S EUX-E-SIS.

For Shaving without Soap, Water, or Brush.

### CAUTION.

The Labels on GENUINE EUXESIS bear
two signatures—A. S. Lloyd, in black
ink, and that of his Widow, Aimée
Lloyd, in RED. Refuse any other.

Sole Manufacturers AIMÉE LLOYD & Co., Ltd.
23 PANTON STREET, HAYMARKET, LONDON, S. W.

N.B.—When ordering from Wholesale Houses write LLOYD'S EUXESIS (WIDOW'S).

Extract from:

### THE PHARMACEUTICAL JOURNAL

July 10, 1926. .

AUSTRALIAN SANDALWOOD OIL.—"Some correspondence has shown that this description of sandal-wood oil derived from the wood of Fusanus spicatus is very largely used medicinally in Australia and other countries. The Committee are of opinion that a monograph on this oil might be inserted in the British Pharmaceutical Codex, so that oil of the quality required by the characters and tests could be ordered for use in Australia and wherever the appropriate authorities considered this variety of oil could usefully replace the more expensive kind obtained from Santalum album."

## "PLAIMAR" SANDALWOOD OIL

has always conformed to the Characters and Tests referred to above.

Distilled by

#### PLAIMAR LTD.

Perth, West Australia, from West Australian Sandalwood.

Samples, Price and analysis may be obtained from the European Agents, MAXWELL, PLAISTOWE & CO., LTD. 8 Old Jewry, London, E.C.2. Telephone: Central 5859. Cables: "Azucena, London."

Paris: Etablissements Plaistowe, 11 bis, Rue Volney

4



## DO YOU STOCK THE FOLLOWING "QUICK SELLERS"?

- "HARLENE" for the Hair
- "CREMEX" Shampoo Powders
- "UZON" Brilliantine
- "ASTOL" for Grey Hair
- "JUNOFLORIS" SPRING BREATH
- "JUNOFLORIS" Dentifrice
- "ASTINE" Vanishing Cream
- "ASTINE" Tooth Cream
- "ASTINE" Shaving Stick
- "ASTINE" Nail Cream
- "HARLENE" Hair Fixative
- "HARLENE" Wave Setting Lotion

## Always In Full "Sale"!

**EDWARDS**'

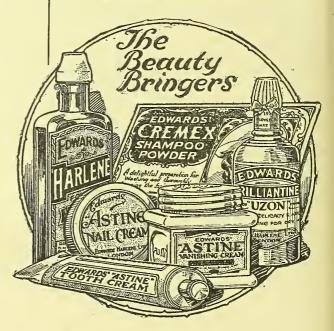
## HARLENE

### TOILET PREPARATIONS

There is never a lull in the "Trade Wind" that keeps these World-Famous Toilet Preparations in full "Sale." The Excellence of the Products themselves, coupled with the Extensive and Continuous Advertising Compaign, keeps the "Trade Wind" always at full strength.

Thousands of new customers are introduced every week!

No Chemist or Store can afford to be without these World's Record Sellers!



For Full Particulars, Terms, etc., write to:-

### EDWARDS' HARLENE LTD.

20, 22, 24 & 26 LAMB'S CONDUIT STREET, LONDON, W.C.1

GDT 11

# Did you see the Gibbs Daily Mail front page this week?

Just another typical bit of Gibbs Dentifrice advertising. Maybe you've felt the pull of it already. Breezy and topical. Linking Gibbs products with the mood of the moment. Sending customers to you.

Gibbs continuous, extensive and intensive advertising is working hard all year round—for your benefit—in national dailies, provincial papers, weekly and monthly magazines, and all classes of home and women's journals.

All we ask is that—in your own interest—you should make as bright a display of Gibbs products as possible. Write us if you want display material for either counter or window. Then customers will go to you for their Gibbs products.

We need hardly say you should also have an adequate stock. You know that.

## Gibbs Toilet Preparations D. & W. GIBBS, LTD. (Dept. 43 D.G.), LONDON, E. 1.

The story care the story of the

the original combined Cream and Powder

## la VELOUTY



The advertised line that you are asked for.

NOW ON P.A.T.A.

Samples free upon receipt of trade card or billhead.

PRICES:—Full size pot - 21/- doz. RETAIL 2/9

Super tube - 22/- ,, 3/
Large tube - 14/- ,, 2/
Medium tube 7/- ,, 1/
Handbag tube 3/- ,, 6d.

Made in four shades !

WHITE, IVORY, NATURAL and OCHRE.

Obtainable from your regular Wholesaler or direct from the Sole British Agents:

DEBACQ & HARROP, 68 Newman St., Oxford St., London, W.1

## SELL BRITISH BRUSHES

and take no risks

#### TOOTH BRUSHES

Sterilised. Secure Bristles. Wire Drawn
Per dozen.
SUPER QUALITY - 14/Rest OUALITY - 11/Rest OUALITY - 11/Per dozen.
Retail at 2/6
Rest OUALITY - 11/Retail at 2/6

Sample order of 1 gross assorted stamped with NAME & ADDRESS } £6

DENTAL PLATE BRUSHES

12/- 14/- 16/- per dozen.

TWISTED WIRE DENTAL PLATE BRUSHES
14/- per dozen.

Actual Manufacturers-

#### RIGBY BATTCOCK Ltd.

Mount Pleasant Works, Upper Clapton, LONDON.

Showroams: 28 Museum Street, London, W.C.2

## CYARDONA

## RAZOR BLADES

ARE YOU STOCKED?

50% PROFIT ON COST | RETAILS 4 FOR 1/-

Write now

THOMAS WARD & SONS, LTD., Wardonia Works,
Razar Blade and Cutlery Manufacturers. SHEFFIELD.



BETTER than EVER! BIG PROFITS QUICK SALES GOOD STOCK

SELLS the Goods!

'THE EDGE NONE CAN LICK'

Obtainable from all Leading Wholesalers. Inquiries from Genuine Wholesalers only are Invited.

We are prepared to supply REPUTABLE WHOLESALERS on a "SALE OR RETURN" basis for the FIRST ORDER ONLY.

DEPT. C.D. "WANIE" DISTRIBUTORS:
ROEBUCK'S ADVERTISING SERVICE

# H.B.T. Brings Repeat Orders

REPEAT Orders for H.B.T. are coming and will continue to come because to-day so many people are giving special attention to the care of their skin.



## The New Aseptic Toilet and Shaving Soaps

For Skin, Comfort, Health and Healing



The expressed juices of living plants combined in this exceptional soap carry all the fresh vitalities of these plants, flowers and roots to the skin and there exert all their remarkable, refreshing and health-giving qualities.

A London Chemist says :-

"I have been using this H.B.T. Aseptic Soap for months and it is superior to anything on the market both for Toilet and Shaving. This Soap only requires to be known."

## A Special Offer

12 Boxes H.B T. ASEPTIC TOILET SOAP, 2/3 ... £1 7 0
36 Tablets in wooden box ... ... gd. ... 1 7 0
12 H.B.T. ASEPTIC SHAVING SOAP 1/- ... 0 12 0

Less 25% ... 0 16 6

Nett ... £2 9 6

This trial parcel will be sent carriage paid to any address in Great Britain. These soaps may be ordered through any wholesale House.

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"Extrols" are of great assistance and importance to Perfumers by combining all the advantages and eliminating all the disadvantages encountered in using Essential Oils and Extracts.

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In the "ORANGE BOX." In 3 Sizes, and in Hard, Medium and Very Hard Unbleached Bristle

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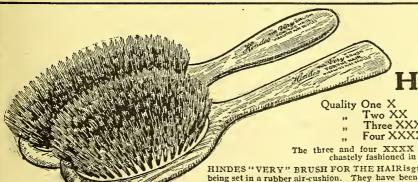
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HAIR BRUSH

Quality One X Sold at 7/6d. each.
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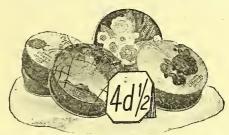
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Telephone: Central 4330.

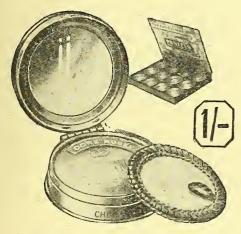
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This lovely hot weather brings a demand for something to refresh the skine In addition to the popular perfumes of Lilas, Jasmin, Muguet, Fougere, Chypre, Oeillet, Rose and Violet, we can now supply in the new perfumes of

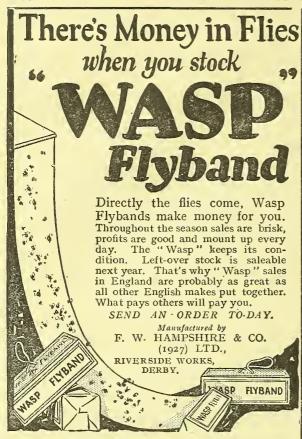
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CHEVREFEUILLE VERVEINE
(Honeysuckle) (Verbena)

In all sizes from sample bottles to

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## Cemetery Brand Fly Catchers

By far the most efficient on the market. They have survived the competition of 50 years. They are certainly

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Virus for Rats and Mice, single tube, 2/3 tubes, 5/
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15/- per doz.

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Discount off Retail Prices 25% Monthly Account, or 33½% cash with order.

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For destroying Blackbeetles, Cockroaches, Crickets, &c.

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In tins 3d.

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In 1, 3/8

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In 1, 18/-Danzo Beetle Powder will not deteriorate by keeping.

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Bob Martin's '92 Ointment now replaces the well-known Mange & Eczema Lotion; Shilling tins in attractive Display Outers; sells readily and very steadily.

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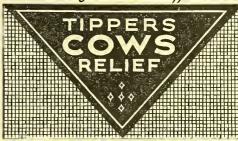


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Undeniably the most effective.



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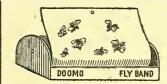
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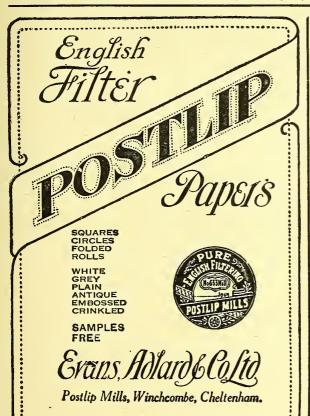
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Yeast specially prepared for medicinal purposes.

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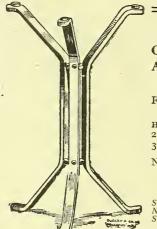
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				£	8.	d.	
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Miss Isobel Reid		•••	•••	86	15	61	
Miss Janet McDonald	•••	•••	•••	60	6	4	
Miss Mary Sydie		•••	•••	90	19	7₺	
Miss Patricia Ward	•••	•••	•••	90	5	6	
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A wonderful example of successful selling efforts by the staff of a well known Scottish Pharmacy!

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UNITED DRUG COMPANY LTD.

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10 & 11 MINCING LANE, LONDON, E.C.3. TEL, : ROYAL 5094

GUMS, ARABIC and TRAGACANTH as Imported or

Finely Powdered. SHELLACS ALL GRADES.

This remarkable discovery, which affords complete and lasting protection to man and beast against all flies, midges, etc.,

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1/6 pots (for personal nee) 12/- per doz. 5/- tins (for veterinary nse) 42/- per doz. THE KAMBEROL SYNDICATE, 26 Park Avenue, Willesden Green, London, N.W.2.

Wholesale distributors for the United Kingdom. MEGGESON & CO., LTD. BERMONDSEY, S.E.16

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Shows the best profit to the Chemist and is the cheapest to the Customer.

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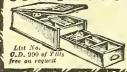
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Oldest British Manufacturers. Lowest Prices SOLE MANUFACTURERS: Highest Qualities. F. W. FOLKES & Co., Wallbridge Avenue Mills, Frome, Somerset.

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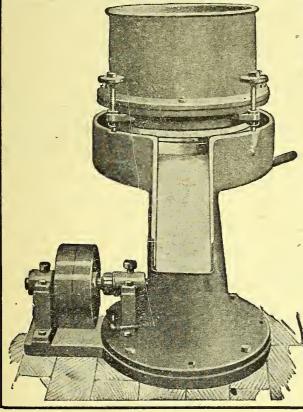


references. improved 16 improved 16 × 84 × 6 lns. mahogany, highly polished, lock to lld and drawer, warning bell, eccret catch and check action. Coils 23 ins. wide 4/- doz. DUDLEY & COMPANY, LTD. 6, Holloway Road, London, N.7. 558-576, Holloway

THE CHEMIST'S MONOPOLY-SECURES YOU REGULAR CUSTOMERS

5d. per lb. PROFIT or 7d. per lb. when cash accompanies order.

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THIS ILLUSTRATION SHOWS THE NEW SUPER SPEEDY MILL

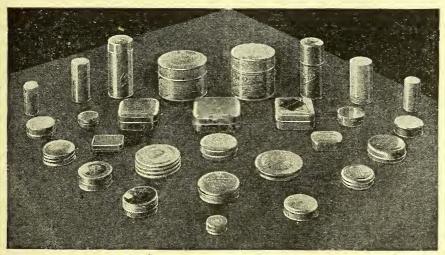
THERE are now approximately 300 of S. W. WILKINSON'S original Speedy Mills in use by British and other Manufacturing Chemists. A number of the new Mills are now in use and are giving much success and pleasure to the users and much credit to the designer and maker. Splendid testimonials have been received. The new Mill is the result of nearly 20 years' experience with the original Mill and the various uses to which it has been applied.

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Chemical Engineers

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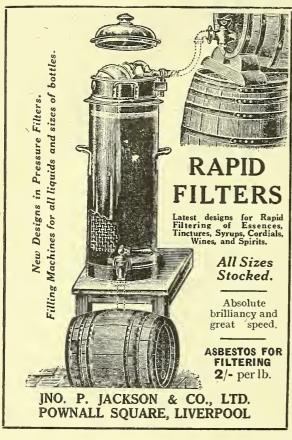


GIVING, as it does, a choice of dainty finishes—bright, satinfinished coloured—aluminium provides an attractive and inexpensive container or cap for a wide variety of toilet preparations.

Illustration by courtesy of John Dale Manufacturing Co., Ltd.

Aluminium

THE BRITISH ALUMINIUM CO., LTD., Aluminium Producers, Adelaide House, London, E.C.4



# Mr. Chemist,—

Before you place your orders for Aluminium Hot Water Bottles ask your wholesaler to show you the new "Corfalgar" range—the value will astound you —and remember—you have the Corfield guarantee of absolute dependability.

Corfalgar bottles are British throughout, made from deep-drawn aluminium of 99% purity and will not leak.

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# This gives a thorough mix-up

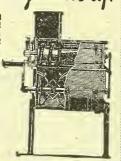
A Gardner "Rapid" sifter and mlner will thoroughly sift and mix ½ oz. of one ingredient with a 30-lb, mixture of dry powders at one operation, and "every piuch of the whole will show its presence"—a customer's statement.

Write us for list of Ball Mills Disintegrators, Millstones and Mills, Drum Sieves, Drying Machinery, etc.

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A safe, simple and reliable remedy for Children's Ailmouts is advertised so extensively in the daily and weekly Press as to bring mothers to the retailer without effort on his part.

The selling has been done before the mother reaches the chemist, and, having supplied her, it is only common seuse to claim she will buy other family necessaries from him. Moreover, the coutinuous demand for it produces a quick turnover.

For Direct Terms apply to-

OSCAR SCRUTON & CO., YORK

Small Rotary Pill Cutting Machine & Piping Press.

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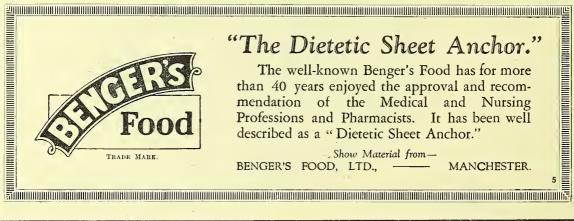
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# CHEMIST & DRUGGIS





## CONFERENCE NUMBER

JULY 28, 1928.

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#### Recent Patents

Abstracts of specifications of recently-granted patents for inventions. The complete specification (1s. each including postage) of any British patent can be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, on quoting the name of the patente and the number of the patent.

Mercury Compounds.—Complex soluble bodies containing mercury for use as disinfectants are obtained by the action of corrosive sublimate on 2-aminophenol. 4: 6-disulphonic acid prepared by sulphonation of 2-aminophenol. (I.G. Farbenindustrie. 292,245.)

Hop Extract.—A method of preparing hop extract which consists of distilling fresh or dried hops to obtain the volatile oil, boiling the hop pulp in a sugar solution to extract bitter principles, tannins, etc., concentrating this extract to a syrupy consistence in vacuo, and then adding the volatile oil. (E. C. Horst, San Francisco. 290,852.)

Photo-prints and copies.—A plate, film or paper is coated with a sensitive layer of a salt of 1:2-naphthoquinone-4-sulphonic acid, and after exposure to light developed by means of an alkaline solution containing an acid methylene or methyl group (e.g., trinitrotoluol, acetoacetic ester, cyanacetamide, resorcinol), or incorporating the developer with the sensitive salt, and after exposure developing the image by ammoniacal vapour, the large number of developers available making it possible to obtain every tint of the colour scale. (I.G. Farbenindustrie. 286,736.)

#### English and Welsh News

The Editor will be obliged if subscribers will send him marked copies of newspapers containing items of interest for insertion in this or other news sections.

#### National Association of Medical Herbalists

The sixty-fourth annual conference of the National Association of Medical Herbalists was held recently in the Guildhall, Worcester. A civic welcome was accorded to the members and their friends by the Mayor (Mr. A. E. Coverdale, Ph.C.), who said that he could appraise many herbs for their therapeutic value. The Mayor paid a tribute to the secretary of the Association (Councillor Charles Burden), of Worcester. All the retiring officers were re-elected by substantial majorities the one yearney. were re-elected by substantial majorities, the one vacancy on the Council being filled by the election of Mr. Alfred Hall, M.P.S., who has undertaken to superintend the chemistry section of the Association's tuition scheme.

#### Exhibition of Antiques and Works of Art

An exhibition of antiques and works of art, organised by "The Daily Telegraph," opened at Olympia, London, W.14, on July 19, and closes on August 1. For visitors W.14, on July 19, and closes on August I. For visitors connected with the drug trade the chief attraction is, no doubt, the choice collection of pharmacy pots lent by Mr. Geoffrey E. Howard. About half of these are in Lambeth Delft of the seventeenth century, and are dated: among them we noticed specimens inscribed respectively "ROSAR: C: AG-T.W. 1680," "PENIÆ 1666," "S.DE: ALTIÆ 1674," and "ÆGIPTICV: 1697." The remaining pots are in Italian majolica of the sixteenth century, and include one labelled "LOC. SANUM." Among the pictures (which are collectively valued at £1,000,000) is Henry Thomson's "Crossing the Brook," lent by Colonel M. A. Swinfen-Broun. Nelson relics, a pianoforte used by Beethoven, and many other items of historical interest are to be found, together with representative displays of old furniture, silver, china and postage stamps. niture, silver, china and postage stamps

#### Antimonial Contamination of Lemonade

More than fifty assistants employed by Bainbridge & Sons, Ltd., drapers, Newcastle-on-Tyne, became suddenly ill and were taken to hospital after drinking, on July 14, lemonade made from crystals. The public analyst reports: "There is no doubt that the cause of the illness was antimony compounds contained in the lemonade which the assistants drank, and there is no doubt either that the source of the antimony compounds was not the lemonade crystals, but the enamel from the buckets which contained the made-up lemonade. I have not yet determined the quantities, but that is not a matter of great importance. I have established that the lemonade contained in the bottles, some of which were from single buckets and one of which contained a mixture from a number of buckets, all contained considerable amounts of antimony compounds, that the antimony is easily extracted by acid, and that the lemonade crystals are perfectly free from antimony or any other harmful substance, and quite harmless in themselves. The acid liquid made from the crystals has dissolved antimony from the enamel whilst standing in the buckets. The enamel of the bucket which I have here has been completely destroyed by the action of the liquid, so that it can be brushed off by the fingers, leaving

the bare metal. Antimony oxide is a very usual constituent of these enamels, and not all of them would be so easily acted on as this one. . . . ' Messrs, Bainbridge state: "It is only fair to the firm of chemists who supplied the crystals to emphasise that they were of the usual standard, and it was the action of the contact of the fruit acid in the crystals with the glaze of the pails that pro-duced the unfortunate results." The assistants have recovered.

#### Birmingham

Unless additional financial support is forthcoming the committee of the Edgbaston Botanical Gardens, laid out by the celebrated landscape gardener Loudon, must decline an offer to renew the lease, which expires in 1930.

A correspondent writes: It is curious that the pharmacist leaves the reading of the barometer and the thermometer to the optician. In former days these instruments almost invariably found a place in the highclass pharmacy, but now the weighing machine, occasionally a chemical balance, and sometimes a microscope under the usual glass shade are to be seen. In my day we had water and wind gauges, and made daily charts and exposed them to view in the shop. Tempora mutantur et nos in illis mutamur.

#### Liverpool

There are general complaints of slack trade, but chemists are being somewhat compensated by a fairly good business in photographic goods, developing and

A marriage of considerable local interest is announced on p. 106. Both Mr. and Mrs. Greenwood are members of the Liverpool Pharmacy Tennis Club, and the bridegroom is president of the Bolsover Swimming Club. honeymoon is being spent in Norway.

It has been decided to hold a civic week, from September 22 to 29, and an elaborate programme is being arranged. A feature is to be a display of Liverpoolmade goods in Liverpool shop windows, and manufacturers and retailers are asked to co-operate in this. the city is an important centre for the chemical and drug trade, local business people will have a good opportunity of showing what they can do.

#### Miscellaneous

CO-OPERATIVE SOCIETIES' REPORTS .- The quarterly report of the Plymouth Co-operative Society shows that the sales in the drug department during the thirteen weeks ended June 2 amounted to £4,464, an increase of £641, or 16.7 per cent., compared with the corresponding period of 1927. The Mutuality Club, the Society's credit trading organisation, brought £48 worth of business to the department, compared with £24 in the June quarter of the previous year.—The report of the Coventry and District Co-operative Society for the quarter ended June 2 states that the sales in the drug department during the period amounted to £1,474 10s., which amount was an increase of 100 per cent. over the corresponding period of 1927.

#### Scottish News

Mr. P. F. Kelly, chemist and druggist, has opened a shop at 155 Hilltown, Dundee.

Mr. J. Whyte, chemist and druggist, has taken over the business of Mr. J. H. Fisher, Ph.C., High Street,

"A continuance of fine sunny weather is keeping many chemists busy with photographic business," writes a Fife correspondent.

Coldstream Town Council has granted a licence for the sale of agricultural and herticultural poisons to R. Carmichael & Sons.

Sir James Leishman, chairman of the Scottish Board of Health, addressing the Scottish Conference of Friendly and Approved Societies in Edinburgh on June deplored the great increase in expenditure in connection with Health Insurance.

#### English Herb Crops

The following reports have been received from the various English growers :-

William Ransom & Son, Ltd., write: -

BELLADONNA.—This has been injuriously affected by the wet and frost last winter; the frosts in April and May caused a certain amount of damage, so there is only a fair crop this season.

crop this season.

Henbane.—Like belladonna, this suffered severely by the wet winter and many of the roots rotted. This crop is barely up to the average. The first biennial plants look well, but rain is needed to give a really good yield.

DIGITALIS.—Sowings have been encouraging for a satisfactory biennial plant next year.

LACTUCA VIROSA is still in considerable demand and the crop this season will be a good one.

LAVENDER.—The acreage is not great, but the flowers promise well; hot and dry seasons like the present always favour the production of an high quality oil.

PEPPERMINT.—The drought is bad for this crop and the yield of oil will be below the average.

CHAMOMILES are looking well and will be ready for distillation earlier than usual.

ROSEMARY.—The plantations were almost wiped out by the severe frosts last December; some years will elapse before they are fully restored.

they are fully restored.

Hollands Distillery (Essential Oils), Ltd., write as follows:

LAVENDER.—As is usual now, most of the flower is bunched for market. A better price is obtained in this manner than from the oil. There will be very little oil available, and what there is will be quickly taken up by buyers, the demand being much greater than the supply.

PEPPERMINT.—The planting out this season was done under the control of the

better conditions than last year, the favourable weather in the later spring permitting a continued pulling of the plants. All the new acreage planted looks exceeding well, although rather short in growth owing to absence of moisture. What is wanted is a few good warm rains to bring on the growth. is wanted is a few good warm rains to bring on the growth, and if we get favourable weather for harvesting we predict a nice crop of young mint of exceptional quality. The second year plantations are not so promising. The herb looks well but scraggy, due to the excessive moisture in the ground affecting the roots during the winter; many bare patches are noticed where the root has rotted. Good growing weather and plenty of sunshine will help to counteract the loss of root. At the moment the outlook is promising, but it depends on the amount of oil obtained per still whether prices will be easier.

Joseph Seymour writes:-

POPPY HEADS will be a good crop.
DILL SEED is doing well.
PEPPERMINT.—We have had a lot of trouble with caterpillars, and in some places 25 per cent. of the crop is destroyed, but rain would improve it.
BELLADONNA is a big crop.

John Jakson & Co. (Mitcham Road), Ltd., write:-

PEPPERMINT.—Owing to the very cold weather early in the year planting was begun very late. The plants, nevertheless, took well, and in spite of the dry weather we are experiencing they are holding on well. Given some rain within the next week or two we think there will be every prespect of a good average yield, in spite of the fact that the plants are showing a tendency to turn brown, owing to lack of moisture. The foregoing remarks apply also to lavender and chamomiles. lavender and chamomiles.

Arsenic eating in England?—The "Daily Mail" of July 20 published a communication from two residents of Newport, Mon., to the effect that arsenic eating prevails, or has prevailed, near Coleford and Tintern. Reference is also made by both these ladies to herbs (unnamed) taken by the arsenic eaters. It is added that the habit is kept as secret as possible.

EXPORTS OF EPHEDRA VULGARIS FROM CHINA TO THE UNITED STATES.—A phenomenal increase in the exports of ephedra vulgaris from China to the United States is disclosed in a report from U.S. Vice-Consul A. J. Ward, Tientsin, China. Among the crude drugs declared for export to the United States during the first seven months of 1926 and 1927, figures for ephedra vulgaris were 8,317 lb., valued at \$741, and 477,218 lb., worth \$53,652 respectively. Of the 477,218 lb. shown for the first seven months of 1927, more than one-third, or 147,582 lb., valued at \$15,667, were exported in July. EXPORTS OF EPHEDRA VULGARIS FROM CHINA TO THE

#### Retail Pharmacists' Union

#### **Executive Meeting**

A MEETING of the Executive of the Retail Pharmacists' Union was held at 4/5 Queen Square, London, W.C.1, on July 17, Mr. J. E. French in the chair. The Executive decided to revise the scale of dispensing charges in the price list and directed that the new scale be published in the next issue of the list, also to issue a stamp bearing the words "Dispensing charges in accordance with National Scale."

A communication was received from the London and Home Counties Ironmongers' Association drawing attention to the proposed formation by the Universal Housing Co., Ltd., of a Householders' Association, the objects of which are to provide members with facilities for buying goods and enabling them to secure a share of the discount usually allowed to the trade. It was decided to draw attention of the P.A.T.A. and other associations connected with the drug trade to the proposed scheme.

The secretary for the Chemists' Defence Association

reported that there were eleven cases outstanding since the last meeting of the directors, of which three might be considered closed. One claim arising from injuries caused to a customer falling on a mat in the shop doorway had been settled for a payment of £12 12s. The remaining cases were left in the hands of the secretary. A new claim had arisen during the month in respect of damage caused to a motor car by a cycling errand boy; this had been settled by a payment of £1 10s. It was also reported that a member had been fined £5 under the Sale of Food and Drugs Acts in respect of a sale of glycerin and borax. Fifteen free analyses had

The chairman reported upon the meeting he had attended dealing with the memorial to Sir William Glyn-Jones. It was decided to appoint Messrs, Martin and Mallinson as additional representatives upon the committee and to give the full support of the R.P.U. and C.D.A. to the successful establishment of a suitable

memorial.

The position of chemists who are manufacturers of sheep dips was considered in view of the new regulations of the Ministry of Agriculture under which double dipping of sheep with an arsenical dip is allowed provided the manufacturer of the dip guarantees the farmer against any loss under certain conditions. It was felt that the indemnity in respect of retail sales which members of the C.D.A. already possess could not be extended to cover the manufacturer of sheep dips, and it was decided, therefore, that where a chemist was a manufacturer of sheep dip, the C.D.A. would give him the additional cover required by the new conditions at the rate of 5s. per £100 of the indemnity cover desired. This was arranged in order to enable those chemists to give their customers the following guarantee :-

wherever it can be proved that any loss of sheep by death is directly caused by the application of the member's dipping powder used under the Sheep Scab Amendment Order of 1928 the member will compensate the owners for any such loss sustained provided that: (1) Apart from scab the sheep were in a good state of health. (2) The directions for use and general instructions for dipping printed on the labels were complied with. (3) Notification of the loss is made to the member within twenty-four hours of its occurrence. (4) Reasonable facilities are given to make investigations into the cause of the loss. (5) In no case shall the member be called upon to pay for the loss by death of any individual sheep a sum in excess of £5.

The above guarantee to apply only when the member's dip is used for both the first and second dipping.

#### DELEGATES' CONFERENCE.

The conference of representatives of Pharmaceutical Committees was held at the Holborn Restaurant, London, W.C.1, on July 18. Mr. J. E. French, chairman, was supported on the platform by the vice-chairman (Mr. H. Gilleghan), the treasurer (Mr. P. F. Rowsell), the secretary (Mr. G. A. Mallinson), and the assistant secretary (Miss B. Sharples. Ph.C.), and there were present over 200 delegates from Pharmaceutical Committees. The chief business was the question of the continuous of the chief business was the question of the continuance of the

National Health Insurance contracts, and whilst resolutions, both for and against continuance, were before the conference, it was decided to debate the matter on the following:—"That the existing contract with the Ministry of Health for N.H.I. dispensing be continued subject to the discretion of the Executive." This was adopted by a large majority after an undertaking had been given by the Executive that the conference would be called together again in December next if there was any serious change in the condition of the Drug Fund before December, otherwise the Executive were to be free to us their own discretion regarding the advisability of dis-continuing the contract. There were eight resolutions continuing the contract. There were eight resolutions dealing with the Drug Fund, and the conference ultimately adopted the following:—

That the conference expresses dissatisfaction with the insufficiency of the present remuneration for N.H.I. dispensing, and urges the R.P.U. Executive to press for a higher allocation to the Drug Fund for dispensing purposes as and

when possible.

That, in the case of future epidemics, the Ministry of Health be requested to make a further allocation to the Drug Fund.

That the time has come for a list of those articles considered to be foods, and therefore not to be supplied at the expense of the Drug Fund, to be issued officially.

Three resolutions dealing with overspent areas were tabled, but it was unanimously decided to continue the present methods for the time being. Four resolutions on the Tariff question, one of which asked that no additions should be made to the Tariff whilst discounting was in force, were finally left to the discretion of the Executive. There was the usual resolution objecting to the returning of the full deposits on bottles, but the conference on this occasion regarded it as being impracticable, as was the case with another resolution suggesting a change in the wording of the notice on the back of the prescription. The question of special fees for D.D.A. prescriptions was raised in two resolutions, but it was decided that this matter should be deferred.

The advantages and disadvantages of local formularies were debated thoroughly upon two resolutions, one asking that a National Pharmacopæia be adopted, and the other suggesting that local formularies were in the best interest of panel pharmacists. The conference ultimately agreed "That a National Pharmacopæia be adopted for N.H.I. dispensing."

The testing of dispensing was brought up by two resolutions, one dealing with the form of certificate, and the other, the position of the chemist in regard to the supply of dressings in sealed packages. Regarding the latter, it was suggested that some arrangements be made for holding the manufacturer responsible and the chemist free from blame when sealed dressings had been bought under warranty conditions, on a report from the secretary that the Executive had this matter in hand the resolution was not pressed. With reference to the former, the secretary reported upon the efforts that had been made to eliminate the percentage column from the analyst's certificate. The conference adopted the following resolution after hearing from various delegates the statements which had been made by lay members of Service Subcommittees because of their erroneous interpretations of the percentage "That the official testing of dispensing certificates issued their erroneous interpretations of the percentages: by the analyst be confined to a statement of the amount prescribed and the actual amount found by analysis to be present, in grains or minims.'

The delegates present were unanimous that the anomalcus position in regard to disallowed items should be cleared up as soon as possible, and the following resolu-tions were carried unanimously: "That for the better working of the Drug Fund, it would be policy that there should be no diversity amongst various Insurance Committees as to what is expedient for payment or otherwise, and "That some means be found to deal with doctors who repeatedly prescribe articles not properly chargeable to the Drug Fund."

Resolutions suggesting that the R.P.U. should undertake a publicity campaign regarding the position of chemists in connection with the N.H.I. Act were submitted, and the conference, without adopting the resolu-tions, left the matter to the Executive to choose the most appropriate time for such action.

#### Canadian Notes

FOOD AND DRUGS REGULATIONS.—A supplement to the "Canada Gazette" (February 18) contains the text of an Order in Council dated February 6, 1928, prescribing certain revised regulations under the Canadian Food and Drugs Act. Part I of these revised regulations specifies the manner in which food and drug products offered for sale in Canada are required to be labelled, and also prescribes the quality standards and constituents of food products. Part II of the regulations contains the provisions for fixing standards of quality and potency, and defining official methods of biological testing of certain drugs.

Additions to Schedule of Narcotic Drugs Act .-The Department of Health, Ottawa, recently issued a circular announcing that two preparations, "Eucodal" and "Dicodide," said by the Council of the League of Nations to be narcotics capable of producing harmful results similar to those specified in the Convention, have been added to the schedule of the Opium and Narcotic Drug Act. Eucodal is the hydrochloride of dihydrohydroxy-codeine, while dicodide is a hydro-codeinone, and is sometimes used as a morphine substitute in treating the morphia habit, and they are not in common use. The change in the regulations permitting the Minister to cancel licences at his "discretion" is a very important and significant part of the circular. Formerly the Minister could only cancel a licence when the licensee was found guilty of an offence under the Act.

DENATURED ALCOHOL. -Some years, ago the Canadian Government found that denatured alcohol, used by nurses and doctors for rubbing, known as grade No.1-F rubbing alcohol, was being largely bought up by bootleggers for the purpose of distilling it and removing the denaturant. To check this the Government brought in a restrictive programme by which retailers and institutions could only have a specified quantity per month. This regulation greatly reduced the activity of the bootleggers. Latterly the attention of these gentlemen has been directed toward the denatured alcohol number 1-D or iodine alcohol for the making of tinctures of iodine which are completed by the addition of potassium iodide and iodine. The result of their illegal operations has two effects; one was that the Government lost a considerable amount of revenue and the iodine and potassium iodine markets were threatened with a new form of competition, as the recovered denaturants could be sold at a very low price. The Dominion Government has now brought out for the control of the sale of this grade a system of permits, by which only permit-holders can sell the product, and the sales by them are limited to one gallon of iodine preparations per month to each person or institution duly qualified to handle the product for sale or use. Reports of the sales have to be kept by each vendor and submitted each month to the Government.

Canadian Mineral Acids.—According to the Deminion Bureau of Statistics, the production of sulphuric acid in 1925 amounted to 166,791,926 lb. Exports have been steadily increasing, and in 1925 totalled 38,358,600 lb. For the fiscal year ended March 31, 1927, imports were 86,851 lb., valued at \$7,519, entirely from the United States. During the same period 47,585,600 lb. valued at \$267,338, was exported, almost all of which went to the United States. Fer one-half of the domestic consumption is used in petroleum refining and in the manufacture of ammonium sulphate. Nitric acid is made in Canada only from sodium nitrate or Chile saltpetre, and sulphuric acid. The production of nitric acid in 1925 was 8,687,715 lb. During the same year 130,962 lb. was imported. Hydrochloric acid is a by-product obtained in the manufacture of sodium sulphate from common salt by decomposition sodium sulphate from common salt by decomposition with sulphuric acid. Recently it has been manufactured synthetically by one plant from hydrogen gas and chlorine in the presence of a catalyst. Hydrochloric acid is produced by four firms in Canada, and in 1925 production amounted to 7,128,821 lb. Imports for the fiscal year ended March 31, 1927, were 365,248 lb., valued at \$9,384, entirely from the United States.

South African News
From "C. & D." Correspondents.
"The Chemist and Druggist" is supplied weekly to members of Chemists' Societies in South Africa.

DUTY ON CREAM OF TARTAR SUBSTITUTES.—The Union Minister of Finance has announced a readjustment of the Budget Tariff proposals affecting cream of tartar substitutes, so as to subject the following substitutes, viz., acid phosphates of aluminium, calcium and sodium and acid potassium tartrate to a duty of 2d. per lb. or 30 per cent. ad valorem, whichever duty shall be the greater.

CHEMISTS' DINNER.—At the annual dinner of the Port Elizabeth and District Chemists' Association, held at Beach Hotel, Humewood, on June 7, Mr. D. M. Jamieson presiding. Mr. P. Wheeler proposed "The Medical and Dental Profession." He said he saw a desire on the part of the chemists and doctors to come together, and this was essential to all interests. Dr. R. D. Laurie, in reply, said there was no question as to there being co-operation between the two professions. Mr. A' N. Harris, proposing "The Associated Pharmaceutical Societies of South Africa," commented upon the improved position of chemists now as compared with improved position of chemists now as compared with 1923. It was a matter of vital importance, he declared, that the two professions should amalgamate. Mr. D. Mr. Jamieson replied, and criticised the practice of doctors doing their own dispensing. Mr. R. H. Bradford gave the toast "The Port Elizabeth and District Chemists' Association," and in doing so declared that the chemists Association," and in doing so declared that the chemists had all pulled their weight, and had helped to make the parent body the success it was. Mr. Sutcliffe said the Association had been formed for the purpose of protecting the rights of chemists. He was looking to the day when the chemists' profession would be elevated to the position it deserved. He referred to the work of the secretary, Mr. R. S. Lowden, saying that he was the right man in the right place. Mr. A. A. Harmel proposed "Our Guests," to which Colonel A. P. J. Wares and Mr. Coleman responded.

#### American Notes

A CENTENARY CELEBRATION.—The William S. Merrell Co., manufacturing chemists, Cincinnati, celebrated the hundredth anniversary of the founding of the business on June 10. On that day in 1828 William Stanley Merrell opened a retail chem which has given because of the control of opened a retail shop, which has since developed into one of the best known wholesale drug businesses in the States.

QUININE TRIAL COMING.—Assignment of a place on the court calendar for trial of the libel of information in the action of the United States in the seizure of 383,340 oz. of quinine and derivatives will be the next step of the Government in its actions against the operations of the Kina Bureau in the United States. First seizure was made on or about March 23 in the warehouse of P. W. Choeff, Inc. March 24 in the warehouse of R. W. Greeff, Inc., New York. Acting for that company, attorneys on May 1 served notice on Federal officials to the effect that the company would defend the action through which the Government seeks forfeiture of this quinine.

EXPORTS OF MEDICINES IN 1927.—Although the total value of exports of medicinal and pharmaceutical products -\$20,000,000 in 1927—was but two per cent. above the —\$20,000,000 in 1927—was but two per cent. above the 1926 figure, there were two noteworthy changes in the classes. In foreign countries, as in the United States, there is a growing tendency (says "Commerce Reports") to use preventive medicines, with the resultant gain in exports of antitoxins, serums and vaccines. During the past five years foreign sales of these biologicals have been expanding steadily until the \$1,730,000 worth shipped in 1927 was not only one-fifth higher than the 1926 value but was four times that of 1922 the first 1926 value, but was four times that of 1922, the first year that this class was segregated. Quinine sulphate and other salts of cinchona and medicated plasters were exported in reduced quantities, while prepared medicines, valued at \$17,800,000, were \$300,000 more than in 1926.

#### Insurance Act Dispensing

Record of matters concerning Chemists' interests in the National Health Insurance Acts.

#### ENGLAND AND WALES

#### Local Reports

Blackburn.—During April 28,027 prescriptions were dispensed at a cost of £1,023. The dispensing fees were £526, and the ingredients cost £496. The total average cost per prescription was 8d., and the average per insured person 3.8d. The Insurance Committee have confirmed an arrangement by local pharmacists for the closing of chemists' shops on the occasion of the tradesmen's annual holiday, five chemists opening for dispensing prescriptions between 6.30 p.m. and 7.30 p.m. on the evening of that day. A prescription by a panel doctor for the supply of Jecomalt, a proprietary preparation, was submitted to the Committee recently for payment. Alderman Grimshaw, chemist and druggist, claimed it was a food and not a drug, and could not, therefore, form a proper charge on the drug fund. Dr. Aitken said the Minister of Health was of opinion that certain of these preparations were foods, the cost of which could not properly be met out of money available for drugs and appliances. This came in the same category. Alderman Watson moved the Committee should pay the account, but that the doctor be notified that in future he must not prescribe foods at the cost of the drug fund. This was agreed to.

Bolton.—At a meeting of the Insurance Committee, recently, two cases of inaccurate dispensing were reported. In the first there was an excess of 16 per cent. of sodium bicarbonate. The qualified manager said that the dispensing scales temporarily stuck during damp weather, causing the excess. The scales were examined every three months. He did not check the weight because the assistant was a capable man. The Committee recommended that the chemists be censured. In the second case there was a 19 per cent. deficiency of ammonium carbonate. The stock solution was made a month previously. The chemist stated in future stock solutions of ammon. carb. would not be used. The Committee issued a caution.

Bristol.—A meeting of the Insurance Committee was held recently. Statistical data with regard to drugs and appliances for the Bristol area during the year showed 750,087 prescriptions, at a cost of £25,593 ls. 3d. The number of persons was 138,156, and the total cost per insured person was 3s. 8½d. Dr. C. Corfield, moving the adoption of the report, said a disquieting feature was the increased cost per insured person. In 1926 it was a little over 3s. 5d., and last year the figure had risen to 3s. 8½d. If during the next five or six years similar increases were made, a serious problem would arise. He thought one explanation of the increase was waste. There was no doubt that some of the medicine prescribed was wasted, and he hoped some method would be adopted by which such wastefulness would be prevented.

Derbyshire.—Statistical information presented to the Insurance Committee recently showed that during the quarter ended March 31 the number of prescriptions dispensed was 187,232. The average ingredient cost was 3.4d., and the average dispensing fee 4.4d. per prescription.

Devon.—Having decided that the best use which can be made of a surplus of £2,290 on the General Purposes Fund is the application of a portion of it for the benefit of insured persons, the Devon Insurance Committee, at its June meeting, resolved that the doctors on the Committee's list be advised that the Committee will consider in the more urgent and needy cases the granting of assistance to insured persons towards the cost of appliances outside the scope of medical benefit. It was also decided to provide water beds, and to make five subscriptions of £21 or £15 15s. to hospitals at Exeter, Plymouth, Torquay, Barnstaple, and Newton Abbot, with a view to the provision of x-ray or radium treatment for insured persons, and to subscribe £52 10s. to the Devon Cancer Fund.

Herefordshire.—A meeting of the County Insurance Committee was held recently. The Pharmaceutical Service Subcommittee reported that they had considered

the certificate of analysis of a sample of medicine. A second portion of the mixture was analysed by an independent analyst, who reported that the estimated deficits were 1.5 per cent. and 17 per cent. respectively in two of the ingredients prescribed. The respondent was unable to attend the meeting, and wrote a letter saying that "the ammonium carbonate in our stock bottle had a sediment, and probably he (the assistant) never shook the bottle before taking out the quantity. He further stated: "I need hardly say how I regret the occurrence, but I can assure you the mixtures are all made up under my superintendence, and all poisons checked." The Subcommittee accepted the explanation, but were of opinion that the prescription was carelessly dispensed and recommended that the chemist be fined £2. Mr. S. A. Best, chemist and druggist, pointed out that the main item, which was an expensive one, had been correctly dispensed. The ingredient which showed the greatest dispensed. The ingredient which showed the greatest deficit was very variable. They had previously had an instance of what he considered was the grossest piece of careless dispensing that he had ever heard of, and they had only imposed a fine of 10s. He moved an amendment that a penalty of 10s be imposed, and that a reprimand should be issued. The amendment was lost; an amendment that £1 be the fine was also defeated, and the report was adopted. A report on the scheme for testing drugs and applicates are religiously that he had beginning the state of the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and applicates are stated to the scheme for testing drugs and the scheme for testing drugs are stated to the scheme for testing drugs are stated to the scheme for testing drugs and the scheme for testing drugs are scheme for the scheme for testing drugs are scheme. ing drugs and appliances, submitted by the chairman of the Pharmaceutical Service Subcommittee, showed that from the inception of the scheme up to the end of 1927, twenty-four samples of drugs and seven samples of appliances had been taken. In 1927 there was an improvement in the standard of dispensing with regard to medicaments, but the position in regard to appliances was not so satisfactory. The tests in 1925 and 1926 yielded similar results, and on submitting the matter to the Minister of Health, a reply was received that the statistics available indicate that where errors are disclosed they comprise both excesses and deficits, without preponderance in the direction of advantage to the manufacturer, None of the tests revealed grave errors. The report was adopted.

Liandrindod Wells.—A meeting of the Welsh Joint Insurance (Pricing) Committee was held recently. There was a discussion with regard to the action of the Minister of Health in "his continued efforts to reduce the status of the Welsh Board of Health." A motion was carried demanding the immediate appointment of a chairman to the Welsh Board of Health with the powers hitherto vested in him, as well as increased powers to the same body, and calling upon the Welsh Members of Parliament to take immediate steps in the matter. In the course of discussion reference was made to the fact that the economy would only amount to £300 per annum.

London.—A meeting of the Pharmaceutical Committee took place recently. The report of the Central Checking Bureau for the months of January and February 1928 showed that the margin of error in pricing was 0.03 per cent. and 0.01 per cent. respectively. The Committee approved a report of the proceedings at the special meeting of London panel chemists which was held on May 31. The secretary's report contained, inter alia, particulars relating to dispensing for the first quarters of 1927 and 1928, as follows:—

 Average number of prescriptions per person
 1.54
 1.38

 Av. cost per person
 12.60d
 11.20d

Attention was drawn to the fact that the following appliances, although deleted from the tariff, remain in the second schedule of appliances:—Ice rubber bags, salalembroth wool, sal-alembroth lint, and sublimate gauze. These appliances need not be kept in stock, but must be supplied if prescribed. The Chemists' Service Subcommittee reported on six cases under the testing scheme. In four cases the chemists were cautioned, and in the remaining two cases the chemists were censured.

#### Legal Reports

Unsuccessful Claim against Company's Receiver.—In the Mayor's and City of London Court, on July 19, Mr. Alexander Proven, A.I.C., Guilford Street, W.C.1, sued Mr. G. R. Newman, receiver of Vultex Products, Ltd., chartered accountant, Queen Victoria Street, E.C.4, to recover the sum of £17 10s. for three and a half weeks' salary. Mr. Abrahams, for the plaintiff, said that in June 1927 Mr. Proven was appointed chemist by Vultex Products, Ltd., under an agreement which contained a clause requiring three-months' notice on either side to determine. In February last the holders of two debentures appointed Mr. Newman receiver and manager of the company. At the same time the managing director and secretary of Vultex Products, Ltd., told the plaintiff they could no longer pay his salary. He was advised by the secretary to get in touch with the defendant, and he did so and continued to work. Owing to the unsatisfactory state of affairs, however, he found another appointment, and left on February 25, having given the defendant time to get another chemist, whom he assisted in settling down to the job. He received no salary for three and a half weeks prior to the date that he left. Mr. Proven gave evidence in support of his counsel's statement. Judge Shewell Cooper said that the plaintiff's evidence did not disclose any ground for action against the defendant personally as receiver for the debenture-holders. The best thing to be done was to substitute the Vultex Products, Ltd., as defendants. – The plaintiff would then have a preferential claim on the assets. The judge added that he was compelled to dismiss Mr. Newman from the case and award him costs.

# New Companies

P.C. means Private Company and R.O. Registered Office.

SALTER & POTTER, LTD. (P.C.).—Capital £500. Objects: To carry on the business of universal providers and store-keepers, etc. The directors are T. L. Salter, chemist and optician, and R. P. Potter, pharmacist.

FRED B. WILSON, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of opticians and spectacle makers, chemists, wholesale druggists. R.O.: 28 Church Road, Upper Norwood, S.E.19.

KINGSWAY CHEMISTS, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of chemists, druggists, etc. The subscribers are: S. C. Nutt and H. R. Hatton. Solicitors: Last, Riches & Fitton, 18 Bolton Street, Piccadilly, W.1.

H. E. Hanson, Ltd. (P.C.).—Capital £5,000. Objects: To carry on the business of brokers of and dealers in tar, pitch, . . . petroleum, black or crude oils, tallows, greases, colours, dyes, dyestuffs, perfumes, chemicals, etc. R.O.: Queen's Dock Side, Hull.

Parks Pharmacy, Ltd. (P.C.). — Capital £500. Objects: To acquire the business of chemists, drysalters and perfumiers lately carried on by H. Parks (now deceased) at Longton, Stoke-on-Trent. R.O.: 66 Weston Road, Meir, Stoke-on-Trent.

Keene's Drug Stores, Ltd. (P.C.).—Capital £100. Objects: To carry on the business of drug store proprietors and drysalters, etc. The directors are: Lydia R. Keene, Chrysastom Keene and H. Pitt. R.O.: 76 Greenmount Terrace, Beeston Hill, Leeds.

Landon's Granulated Fertiliser Co., Ltd. (P.C.).—Capital £40,000. Objects: To carry on the business of manufacturers, exporters and importers of and dealers in chemical and other fertilisers, chemicals, lime, etc. R.O.: 1 Queen Victoria Street, London, E.C.4.

Darroch, Newell & Co., Ltd. (P.C.).—Capital £8,000. Objects: To carry on the business of merchants and agents for all kinds of chemical compositions and mineral and vegetable products, paints, colours, varnishes, enamels, etc. R.O.: 1157 Gallowgate, Glasgow, E.

W. Caig Mitchell & Co., Ltd. (P.C.).—Capital £2,000. Objects: To carry on the business of chemical manufacturers and distillers of essences and essential oils, manufacturers of colours, perfumes, food products, etc. R.O.: 54 Paterson Street, Kingston, Glasgow, C.5.

Vaughan & Jones, Ltd. (P.C.).—Capital £500. Objects: To acquire the business of a chemist and druggist and optician now carried on by E. R. Vaughan at Bangor as Vaughan & Jones. The directors are E. R. Vaughan and S. G. Jones. R.O.: 218 High Street, Bangor.

CITY BOTTLE WORKS, LTD. (P.C.).—Registered in Dublin June 16. Capital £1,000. Objects: To carry on the business of manufacturers of bottles of all kinds, etc. The subscribers are: Mrs. M. J. Faulkner and F. Edington. Solicitors: Dobby & McCoy, 65 Lower Gardiner Street, Dublin.

Burdin & Co. (1928), Ltd. (P.C.).—Capital £10,000. Objects: To acquire the business of glass bottle and glass carboy manufacturers, etc., carried on by Burdin & Co., Ltd. (incorporated in 1909) at Knottingley, Yorks. The directors are F. Mellor, A. Mellor, J. Richards, H. Burdin and S. P. Harrison.

Dudley Glanfield, Ltd. (P.C.).—Capital £5,000. Objects: To adopt an agreement with D. J. Glanfield and to carry on the business of photographers, makers of and dealers in photographs and photographic chemicals, apparatus and accessories, etc. Solicitors: Boyce, Evans & Sheppard, 14 Stratford Place, London, W.1.

FRESH FRUIT SYRUPS, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of manufacturers of and dealers in syrups, fruit juices, mineral and aerated waters and other beverages, patent medicines, etc. The directors are: T. C. Gordon and P. A. Warter. R.O.: Room 121, Windsor House. Victoria Street, S.W.

Magnesite Products, Ltd. (P.C.).—Capital £3,000. Objects: To carry on the business of makers and preparers of and dealers in calcined magnesite, limestone, dolomite or cement and mixtures thereof, etc. The subscribers are:—A. W. Comber and J. Parker. Solicitor: J. E. M. Crowther, Abingdon Street, S.W.1.

RODENTUS, LTD. (P.C.).—Capital £200. Objects: To carry on the business of manufacturers, importers and exporters of and dealers in vermin-destroying preparations, etc., and to acquire the registered trade mark "Rodentus." The first directors are: T. I. Grimer and Mrs. Louise Grimer. R.O.: Southwood Avenue, Tunbridge Wells, Kent.

J. Pattison & Co. (Glasgow), Ltd. (P.C.).—Registered in Edinburgh on June 29, Capital £2,000. Objects: To carry on the business of chemical manufacturers and merchants, wholesale or retail general merchants, etc. The directors are J. Pattison, J. C. Blackater, and Mrs. A. M. Pattison. R.O.: 203 Carntyne Road, Parkhead, Glasgow.

GLEN MUAR ESTATES, LTD.—Capital £100,000. Objects: To acquire and develop the Benmuar Rubber Estate, in the State of Johore . . . and to carry on the business of planters and cultivators of rubber, tea and cinchona, winners and buyers of every kind of produce of the soil, etc. The directors are W. H. Anderson, L. Dougal, and A. J. Denison, Catteshall Manor, Godalning, Surrey.

ARTHUR FIELD, SONS & Co., Ltd. (P.C.).—Capital £5,000. Objects: To acquire the business of a wholesale and manufacturing chemist, merchant, importer and exporter, manufacturer of and dealer in fine chemicals, essential oils, essences, chemicals for perfumery, etc., now carried on by A. Field as "Arthur Field, Sons & Co." at Halifax. R.O.: 2 and 4 Portland Street, Halifax.

Taylors (Cash Chemists), London, Ltd., was registered as a "public" company on July 23, with a nominal capital of £2,000,000 in 1,700,000 7½ per cent. cumulative preferred ordinary shares of £1 each with priority as to capital and 6,000,000 deferred ordinary shares of 1s. each. Objects: To carry on the business of chemists, druggists, manufacturers of and dealers in chemical and surgical materials, etc. The directors are Louis Nicholas, C.A., Ernest M. Gee, Sydney B. Mason, and Philip E. Hill.

DAVID HINCHCLIFFE & Son (1928), Ltd. (P.C.).—Capital £5,000. Objects: To carry on the business of soap manufacturers, etc. The first directors are P. Fletcher, S. Webb and G. L. Hinchliffe. R.O.: Spen Valley Oil and Soap Works, Union Road, Liversedge, Yorks.

Australian Candle Co., Ltd. (P.C.).—Capital £10,000. Objects: To produce, deal in and distribute candles, night lights, oils, greases, glycerin, soap, etc. The subscribers (each with one share) are: F. J. Seal and E. Rudland. Solicitors: Linklaters & Paines, 2 Bond Court, Walbrook, E.C.4.

G. Beddow & Co., Ltd. (P.C.).—Capital £2,500. Objects: To adopt an agreement with C. J. Chabot for the acquisition of the undertaking of G. Beddow & Co., of Calcutta Works, 50 Farrance Street, Limehouse, together with the trade name and mark, recipes and full information as to processes of manufacturing and the right to manufacture "Suji Muji," etc. The directors are A. Van den Bok, senr., C. Aldridge, and R. H. Scaggs. R.O.: Calcutta Works. 50 Farrance Street, Limehouse, E.

Mulsoid Co., Ltd. (P.C.).—Capital £10,000. Objects: To acquire the goodwill of the business of the production of Mulsoid Products, and the trade mark "Mulsoid," to work, manufacture and sell such products under a sole and exclusive licence from Industrial Processes Development, Ltd., of Canada, in the U.K., Isle of Man and Irish Free State, and to carry on the business of manufacturers of and dealers in chemicals and allied products, etc., and to adopt an agreement with Industrial Processes Development, Ltd., and Peter Spence & Sons, Ltd. R.O.: 73 Holland Street, Manchester.

Henry Ellison, Ltd. (P.C.).—Capital £20,000. Objects: To acquire the real and personal property forming part of the undertaking of Henry Ellison, Ltd. (incorporated in 1909), and the assets and liabilities in connection therewith, to adopt an agreement with the said old company, and its liquidator, and to carry on the business of producers, refiners, storers and distributors of and dealers in petrol, benzole and other oils and spirits, manufacturers of and dealers in chemical products, etc. The first directors are: H. Ellison, F. Ellison and H. E. Sugden. R.O.: Whitechapel Road, Cleckheaton.

DIRECTORS of Imperial Chemical Industries, Ltd., announce that the new issue of 3.363,855 ordinary shares of £1 each, and 2,242,570 deferred shares of 10s. each, has been over-subscribed by more than £11,000,000.

Companies dissolved:—Notice has been given in "The London Gazette" that the names of the undermentioned companies have been struck off the register and the companies dissolved:—Hygienic Shaving Brush Co., Ltd.; Winco Manufacturing Co., Ltd.

COMPANIES WHICH MAY BE WOUND UP.—The under-mentioned companies will, unless cause is shown to the contrary, be struck off the register and the companies dissolved three months after June 22:—Brush Chemical Co., Ltd.; Power Alcohol, Ltd.; Sherwood Chemical Co., Ltd.

COMPANIES WHICH MAY BE WOUND UP.—The undermentioned companies will, unless cause is shown to the contrary, be struck off the register and the companies dissolved three months after May 8:—Britannia Fertiliser Co., Ltd.; Food Oils, Ltd.; Foods and Fertilizers, Ltd.

Kephaldol, Ltd.—At a meeting held in London on July 11 it was resolved that this company be wound up voluntarily. Mr. F. J. H. Chalmers, 264 Salisbury House, London Wall, E.C., was appointed liquidator, and a meeting of creditors will be held at the above address on July 31.

British Glues & Chemicals, Ltd.—The accounts covering the eleven months ended April 30 show a net profit of £51,286 (against a net loss of £12,760 for the preceding full year to May 31, 1927). It is proposed to pay the fixed cumulative dividend on the eight per cent. preference shares for the half-year ended April 30 last, to place £5,000 to reserve for taxation, and to carry forward £29,486.

COMPANIES WHICH MAY BE WOUND UP. — The undermentioned companies will, unless cause is shown to the contrary, be struck off the register and the companies dissolved three months after March 30:—Caustic Soda, Ltd.; Fressons Drug Stores, Ltd.; Hesperian Chemicals, Ltd.; Irwell Chemical and Grinding Co., Ltd.; North British Fertiliser Co., Ltd.; Optimax, Ltd.; Osmos Waters, Ltd.; Textile and Chemical Products Co., Ltd.

RHONE-POULENC CHEMICAL COMBINE.—At the general meeting of the Société Chimique des Usines du Rhône, on June 1, assent was given to the project of amalgamation with the Société des Etablissements Poulenc Frères, and to an increase in the capital from fr. 27,000,000 to fr. 36,000,000 by the creation of 90,000 shares of fr. 100 each, which will be granted to the last-mentioned company in exchange for its own shares. The meeting also authorised an eventual increase of the capital of the new combine from fr. 36,000,000 to fr. 50,000,000.

Phosferine (Ashton & Parsons), Ltd.—The statutory meeting was held at Andertons Hotel, Fleet Street, London, E.C., on July 20, Sir Herbert J. F. Parsons, Bt. (chairman and one of the managing directors) presiding. The Chairman said that "It will be seen that on July 6 last the issue of 400,000 8 per cent. Cumulative Participating Ordinary shares of £1 each had been paid up with the exception of £392 10s., and of this latter sum a further amount has since been paid amounting to £283 15s., leaving the small balance of £108 15s. unpaid. Out of the capital subscribed the cash purchase price of £310,000 has been paid to the vendors. The greater part of the preliminary expenses has been discharged, and there now remains practically only the stamp duties payable at Somerset House. The contracts specified in the prospectus have been, or will be, carried through without modification, so that it may now be taken that this company has complied with all statutory requirements." With regard to oversea markets, the Chairman said he need hardly remind the meeting that Phosferine has gained a world-wide reputation. The directors are giving careful attention to the possibilities for the gradual development of fresh markets abroad. Already arrangements have been completed for trading in Egypt, and various other fields are under consideration.

#### Private Arrangements

Lewis & Brinson, Ltd., powder puff manufacturers, 22-24 Peterborough Road, Fulham, S.W.—A circular has been issued by Mr. Edward J. Turbyfield, certified accountant and auditor, 1-6 Railway Place, Fenchurch Street, dated June 29, which states that he has been consulted by the above firm with regard to the present position of their business; as they think it advisable to place matters before their creditors preferably to going into voluntary liquidation. So far as ascertainable the liabilities total £3,386 16s. 2d., comprising trade creditors, £883; loan creditors, £1,987; bank overdraft, £400; liability for rent, £117; while the assets amount to approximately £1,250 17s. 8d., being debtors, £267; stock estimated at £800; plant and machinery, £184. This position has been brought about principally by the cost of endeavours to market a branded line, and by bad debts. The accounts for 1927 show a gross profit of £639, but the expenses amounted to £2,279, resulting in a loss of £1,640. These included approximately £500 travellers' salaries, £400 travellers' expenses. £124 advertising, together £1,024, the expenditure of which moneys did not reflect in increased business, and the bad debts amounted to £406 in addition. To summarise the position, it is—liabilities £3,387, assets expected to realise in case of forced realisation—debtors £250. Stock would probably not realise more than £150, making £400. The plant and machinery would doubtless be retained by the landlord. Therefore after payment of liquidation expenses the result would be at the most 2s. in the £. Mr. Turbyfield is, however, able to offer a composition of 5s. in the £, payable as to 2s. 6d. by June 30, and 2s. 6d. by July 31, the payment of which will be guaranteed to him from an outside source and he will be glad to know that creditors are willing to consider these terms.

#### Pharmaceutical Society of Great Britain

#### **Examination Results**

THE following are the results of the Pharmaceutical Society's examinations held in London during the present month :-

		PRELIMINARY SCIENTIFIC							GIST	
	No.	Absent	Failed	Referred	Passed	Absent	Failed	Referred	Passed	
Entered for whole examination Entered for C. & D., and referred sub-	24	3	6	11	4	2	2 -		_	
ject in Pre- lim. Sc	19		_	4	15	2	11	1	1	
Entered for Pre- lim. Sc. only Referred subject	584	17	215	142	210			-	-	
in Prelim. Sc.	102	5		17	80	_	_	-	-	
Entered for C. & D. only	413	-		-	-	9	126	107	171	
Referred subject in C. & D.	102	-	-	-	_	-	-,	47	55	
	1,244	25	221	174	309	13	139	155	227	

Referred in one subject :- Botany, 79; chemistry, 74; physics, 21; pharmacognosy, 15; pharmacy, 107; pharmaceutical chemistry, 29; forensic pharmacy, 4; total, 329.

CHEMIST AND DRUGGIST QUALIFYING EXAMINATION

The following, having satisfied the examiners, have been registered as chemists and druggists :-

Abbott, Mildred, Lindfield Adams, C. R., Skegness Amies, A. R., Enfield Anthony, Herbert, Morecambe

Argyle, Harry, Bulwell Bailey, A. E., Devonport Bailey, H. S., Bilston Baker, W. T. P., Stourbridge

Bankes, R. H., Stretford Barker, M. H., Whaley Bridge

Barteck, Sarah, London Bastion, R. R., Redruth Baxter, A. E., Leeds Baynham, B. E. M., Chatteris

Bingham, T. F., E. Tuddenham

Blacker, E. G. C., Lydney Bloomer, Margaret E., Nottingham

Boasten, Bertram, Oxford Bond, Doris J., Cambridge Boulton, T. J., Nottingham

Bowyer, T. L., Wallasey Bradley, J. L., E. Kirkby Brocklebank, H. P., Minchester

Chester
Bryan, W. A., Dingle
Burton, W. V., Sheffield
Cameron, D. M., Braintree
Canning, H. J., Erdington
Carlton, H. S., Brighton
Castrey, G. A., Llanelly Cawkwell, Eileen A., W.

Ealing

A., Pieter- $\mathbf{E}$ . Collett, maritzburg
Connelly, F. H., Islington
Connock, Joseph, Poplar
Cooper, S. I., Bristol
Coupe, Vincent, Manchester 1., Crawford, Coreen Unstone C. Crawshaw, Н., Wallasey Creswell, Joyce C. Edgbaston Cross, C. H., Harlesden Culverwell, Muriel F Minehead Cutler, R. W. H., Bournemouth Dale, W. E., Aylsham Davey, Herbert, Colne Davies, Arthur, Cardiff Davies, E. G., Port Talbot Emrys, Aberyst-

Celnik, M., Glasgow Clegg, H. H., Romiley

cambe

Davies, with

Cocking, Gilbert, More-

stow Davies, T. D., Lampeter Day, E. R., Norwich Dent, P. J., Kilburn Eastlick, H. S., St. Dennis Eaton, J. H., Wallasey Edmonds, Ida M., Plymouth Edwards, David, Graigwen

Davies, J. S., Waltham-

Egerton, Philip, Stone

Ellis, F. L., Torquay Evans, Christine M., St. Annes-on-Sea Evans, D. A., Liverpool Evans, D. L. E., Aberdare Fairbrass, E. W., Dartford Fanshawe, H. F., Harrógate Ford, C. Louise, Camden

Town Freeman, J. R.Broseley French, L. R., Watering-

Friendship, A. L., Bourne-

mouth Gabbott, W., Wigan Garibaldi, Nicola E., Eastbourne

George, S. F., Hove Geyman, G. G., Stoke Newington

Gibson, G. D., Duffield Sodbury Maude M.,

Goode, Ma Twickenham Goodwin, W. O., Wood-

Goulder, J. L., Chipping Greenway, C. R., Bristol Gregg, W., Manchester Grimson, Muriel M.,

Sydenham Grundy, Arthur, Atherton Haigh, Wilfred, Hebden

Bridge
Harries, Trevor, Gorseinon
Harris, A. W., Hednesford
Harris, E. S., Swansea
Harris, S., Liverpool
Harrison, John, Hornsea
Hawkins, S. W., Brighton
Haydon Harold, New-

Harold, Haydon, Newmarket

A. W., Great Haylett, Yarmouth | Hemingway, A. P., Batley Hewitt, Mary E., Strood Heyes, Clifford, Blackpool Higham, F. G., Liverpool Hodgson, Thomas, Peter-

borough Holding, E. W., Edgbaston Holt, R. J., Haverfordwest Horsfall, Stanley, Hebden

Bridge E. P. L., Hoskins, Criccieth Howell, E. T., Newport

(Mon.) Hulbert, P. H., Swindon Iremonger, Winifred M., Retford

II., Merthyr Isaacs, Tydvil Jacob, L. C., Forest Hill James, Olive M., Mumbles Johns, N. M., Swindon Jones, Anne E. G., High-

bury Jones, D. G., Penygroes Jones, G. T., Walsall Jones, Harold, Birkenhead

Jones, J. G., Swansea Jones, J. E., Wrexham Jones, S. D., Bargoed Jones, T. G., Llandyssul Kearin, L. P. J., Canter-

bury Kennedy, A. G., Aigburth Kenward, Florence M., Brighton

Kerruish, C. H., Douglas King, S. H., Bournemouth Knape, E. H., Leicester Knight, A. E., Soham

Lamb, J. W., Liverpool Lambert, R. W., Handsworth

Lane, L. J. S., Hove
Langdon, G. H., Lee
Lee, S. H. W., Brixham
Lee, W. H., Brixham
Leivers, J. W., Stapleford
Liddon, E. C., Lewisham
Limon, G. S., Lincoln
Lloyd, Florence, Wolvers Lloyd, Florence, Wolver-

Lloyd, Florence,
hampton
Longster, W. T. S., Ashton-on-Ribble
McCarthy, W. H., Walsall
Machin, S., Biddulph
Maden, Harry, Southport
Magee, Margaret A., Hull
Maior, W. A., Peter-

Major, V., borough Martin, C. J., Nottingham Marx, C. S., North

Mason, E. G., Portsmouth Matthews, D. R., Treorchy Miller, G. W., Wembley Moore, F. J., Brighton Moore, W. H., Narborough Morgan, D. A., Aberyst-

wyth Morgan, J. B., Tredegar Morgan, N. E. Davies,

Swansea

Morgan, V. L., Barry Morrell, A. A., Handsworth

worth
Morris, W. G., Carnarvon
Naylor, W. E., Hull
Newman, I., Clapham
Nicholls, W. M., Croydon
Ninnis, A. M., Newquay
North, L. G., Enderby
Nye, J. M., Thetford
Oldham, H., Hyde
Orme, E. A., Hove
Osborne, Horace, Lincoln
Palmer, C. F., Norwich
Palmer, R. L. Spencer,
Thornbury

Thornbury

Park, Muriel M., Plymouth

Parkin, I. L., Edgbaston Paterson, D. E. C., Wednesfield

Pattison, A. H., Seaforth Perkins, D. J., Birming-

Perkins, D. J., Birmingham
Pierce, G. T., Enfield
Pollard, G. M., Ryde
Radford, C. W., Clapham
Remnant, E. A., Pentre
Rhodes, Trevor, Aintree
Richards, E. G., Treorchy
Rippin, A. H., Kidwelly
Rix, Clarice W. S., Ludlow
Roberts, D. W. H., Langharne

harne Rowell, J. A., Nottingham Rubenstein, B. L., New

Tredegar Rushton, N. F., Birmingham

Saunders, C., Burton-on-Trent Sculfer, John, Hampstead Seabrook, Kathleen E., Wood Green

Sellers, Bertram, Burnley

Sharp, L. W., Ponders End Shaw, Gilbert, Kirkburton Shaw, J. L., Lancaster Sherwood, James, Cardiff Simmonds, R. W., Lincoln Smith, H. G. P., Shotton Smith, P. V., Sheffield Smithson, Harold, Hull Solomon, J. B., Cardiff Stead, D. W., Pieter-maritzburg maritzburg
Stephenson, R., Norwich
Stockdale, P. B., Thirsk
Stone, T. A., Sheffield
Street, G. C., Birmingham
Sutcliffe, H. J., Devonport
Swift, Stanley, Birmingham Taper, A. P., Bodmin
Taylor, F. D., Horwich
Taylor, J. J., Fulham
Thompson, S. W., Banbury
Tinney, J. J., Liverpool
Toplis, N., Matlock
Towers, G. N., Grantham
Twittey, W. H., Long
Eaton Eaton

Tyler, C. W., Bridgend Waller, O. H., Westcliff Walters, W. E. V., Torre Ward, H. L., Hove Ware, F. T., Edgbaston Ware, L. W., Forest Hill Warn, L. T., Plymouth Werge, M., Grimsby Weston, J. R., Banbury Whitehead, S. J., Downham Wicks, S. R., Caversham Wilde, L. M., Loughborough Williams, D. G., Treharris Williams, I. J., Blaina Williams, J. J., Bristol Williams, L. H., Plymouth Williams, L. H., Plymouth Williamson, Monica, Jesmond Wilmshurst, J. H., Tun-bridge Wells Wood, W. H., Swansea Worsley, W. R., Wellington Yeomans, F. W., Bir-

PRELIMINARY SCIENTIFIC AND CHEMIST AND DRUGGIST QUALIFYING EXAMINATIONS

mingham

The following, having satisfied the examiners, has been registered as a chemist and druggist:— Jones, Jenkin Griffith, Felinfach

## Sporting Events

THE return match between Redhill and Reigate chemists and the Croydon club took place at Croydon on July 11, resulting in a win for Croydon by 100 runs:—Croydon 161, Rayner 86 not out, Randall 34; Barlow for Redhill took 5 wickets for 42. Redhill 61, Braby 18; Rayner for Croydon took 5 wickets for 12.

THE London Chemists' Golfing Society held a meeting at Enfield Golf Club on July 12, when the medal prize presented by the Mentholatum Co. was won by Mr. R. A. Daniel, and the Hill cup was won by Mr. H. Ingram-Royle.—A meeting of the Society also took place at Thorndon Park Golf Club on July 15. The Rowland Stagg prize presented by C. R. Harker, Stagg & Morgan, Ltd., was won by Mr. W. Deeth, and the bogey prize, the Hepburn shield, was won by Mr. D. M. Rees. The following were the leading scores:-

Rowland Stagg Prize
W. Deeth ... 94—12 = 82
D. M. Rees ... 93—9 = 84
T. T. Johnson 90—6 = 34
G. F. Deeth ... 94—10 = 84
J. Deas ... 97—13 = 84
C. Gallacher ... 96—8 = 88
W. Main ... 96—8 = 88 D. M. Rees ... W. Deeth ... C. Gallacher R. A. Daniel ... 3 down ... 4 down ... 5 down 6 down

THE annual sports of the North London Association and branch of the Pharmaceutical Society were held on and branch of the Pharmaceutical Society were held on July 19 in glorious summer weather at the ground of S. Maw, Son & Sons, Ltd., New Barnet. They were arranged by the president, Mr. R. H. L. Watson, the vice-president, Mr. D. Anderson, and the joint secretary, Mr. W. E. Swanston. That the programme was too long was the only criticism made, and dancing went on until darkness compelled a closure. The prize distribution was made about 10 p.m. by the wife of the president, Mrs. Watson. The most popular winners were undoubtedly the little children. Mr. Watson moved a hearty vote of thanks to the House of Maw, and Mr. A. F. Porter, managing director, responded. Over 150 were present, including Mr. Tucker, president of the South-Eastern, with Mrs. Tucker, and the president (Mr. H. Skinner) and the secretary (Mr. H. N. Linstead) of the Pharmaceutical Society.

#### Pharmaceutical Society of Ireland

#### Council Meeting

THE monthly meeting of the Council of the Pharmaceutical Society of Ireland was held on July 10 at 67 Lower Mount Street, Dublin, the president (Mr. F. J. Fitz-patrick) in the chair. All the members of the Council were present except Mr. James MacCormack, who had sent a letter of apology for absence. The minutes of the Previous meeting were read and confirmed.

A letter was read from the director of the Tailtean

games, requesting a subscription from the Society towards defraying the cost of a gold medal to offer as a prize.

After discussion, it was suggested that as the members of the Dublin Retail Drug Trade Association had already contributed towards the fund, and as the Society had no powers under the Charter to do so, no action be taken. This was agreed to.

#### Benevolent Fund

The President referred to the following generous contributions:—A. Wander & Co., Ltd., £100; May, Roberts & Co., Ltd., Dublin, £52 10s.; A. de St. Dalmas & Co., Ltd., £21; Evans Sons Lescher & Webb, Ltd., £10 10s.; Bristol-Myers Co., £2 2s.; Thomas Christy & Co., £2 2s.

#### GIFT TO THE SOCIETY'S SCHOOL

A report was presented from Dr. Ashmore, the Society s lecturer in materia medica, announcing that Parke, Davis & Co. had generously presented a set of gland specimens for the use of the materia medica class of the Society's school. On the motion of the VICE-PRESIDENT a vote of thanks to Messrs. Parke, Davis for their gift was passed.

#### BRITISH PHARMACOPŒIA REPORT

The President reported the result of the conference which had taken place between the president of the Pharmaceutical Society of Great Britain, the president of the Pharmaceutical Society of Northern Ireland and himself in reference to the selection of three persons for the Selection Committee of the British Pharmacopæia.
Mr. E. White, Mr. Herbert Skinner and Mr. E. T.
Neathercoat had been selected.

Mr. J. SMITH thought that they had come to a very wise decision: he did not think they could have done better. He would have liked to see a Free State representative on the Committee, but, when all was said and

sensitive on the committee, but, when all was said and done, they were not perhaps sufficiently in touch with the necessary research work.

The President said that he would have liked to send an actual member of the Council to the Committee, but it was not possible. Pharmacy as a whole ought to benefit by the selection.

#### BRITISH PHARMACEUTICAL CONFERENCE

The PRESIDENT said that the Council had asked him to invite Mr. Hanna to act as local secretary of the British Pharmaceutical Conference when it met in Dublin in 1929. Mr. Hanna had replied, stating:—"It will be a real pleasure to me to conform to your wishes. . . . I can assure you I greatly appreciate this, another compliment passed to me by your Council, and I shall do my level best . . . to make this function a credit not alone to Irish pharmacy but to the Free State at large."

#### DRAFT PHARMACY BILL

The VICE-PRESIDENT moved :- "That the resolution of the Council passed at the meeting on June 12, 1928, amending Section 46, condition f, of the new draft Pharmacy Bill be rescinded, and that in lieu thereof

Pharmacy Bill be rescinded, and that in lieu thereof the following shall be inserted as condition f:—
(b) (1) The executors, trustees or administrators shall within twenty-one days after the death of the deceased pharmaceutical chemist, or within such extended time as the Act shall permit, notify the Registrar of their intention to carry on such business and the name and address of the Pharmaceutical Chemist appointed to manage and control the same.

Mr. Kerr seconded the motion, which, after a brief discussion, was unanimously adopted.

(To be continued.)

## Pharmaceutical Society

of Northern Ireland

Council Meeting

The monthly meeting of the Council of the Pharmaceutical Society of Northern Ireland was held on July 20 in the Society's Offices, Scottish Provident Buildings, Belfast, the president (Mr. C. A. McBride) in the chair. There were present Messrs. W. J. Hardy (vice-president), Fred Storey, J. E. Connor, W. Martin, J. F. Grimes, S. S. Badger, W. J. Rankin, R. I. Edwards, Dr. S. E. A. Acheson and Dr. Fielden. Mr. David Kirkpatrick (secretary) was in attendance. (secretary) was in attendance.

Apologies for absence were received from Professor Small, Messrs, T. W. McMullan, M.P., W. E. Wilson, H. Lancashire and John Maxwell.

#### THANKS FROM LONDON AND DUBLIN

Mr. Herbert Skinner, president of the Pharmaceutical Society of Great Britain, wrote :- "Strenuous work since I came back has prevented me from sending before since I came back has prevented me from sending before my deep appreciation of the kindness we received in Belfast. I think it was fine, and I know Mr. Linstead thought the same. Please convey my sincere thanks to those I feel are my friends and specially for yourself." Mr. Linstead, in the course of his letter; said neither of them was likely to forget the visit easily.

Mr. F. J. Fitzpatrick, president of the Pharmaceutical Society of Ireland, wrote:—"On arrival here my first duty is to place on record my appreciation of the kindness and hospitality of my Northern friends. I enjoyed every moment of my visit."

#### THE CUSTODY OF A TROPHY

Mr. W. J. Rankin, jun., wrote asking that the silver Mr. W. J. Rankin, Jun., wrote asking that the silver up recently presented by the British Drug Houses, Ltd., for annual golf competition should be kept in the Society's rooms in Belfast or in Dublin, as the case night be. The first competition was played at Knock, and the North came off winners. It was decided, on the motion of Mr. Storey, seconded by Mr. Badger, to accept custody of the cup for the year.

#### BRITISH PHARMACOPŒIA SELECTION COMMITTEE

The General Council of Medical Education and Registration of the United Kingdom wrote stating that the Selection Committee for the appointment of members for the Pharmacopæia Commission had been constituted as

Nominated by the General Medical Council: Sir Donald MacAlister, Bt., M.D.; Sir E. Farquhar Buzzard, M.D.; Sir Humphrey Rolleston, Bt., M.D., and J. B. Leathes, M.D., F.R.C.S.

Nominated jointly by the Pharmaceutical Societies of Great Britain, Ireland and Northern Ireland: E. T. Neathercoat, C.B.E., H. Skinner and Edmund White. Nominated by the Medical Research Council: Sir Walter M. Fletcher, Sc.D., M.D., F.R.S., and F. H. Dale, C.B.E.,

M.D., F.R.S.

The President gave a report on the recent visit of the president and secretary of the Pharmaceutical Society of Great Britain to the examinations in Belfast. During of Great Britain to the examinations in Belfast. During their visit the three presidents met and discussed the question of representation on the Advisory Committee in connection with the Pharmacopæia. Professor Small, who had been suggested by their Society, withdrew, and it was agreed that the representatives should be Mr. Skinner, Mr. White, and Mr. Neathercoat. The Selection Committee had nothing to do with the Compiling Committee. He wished to thank all who had helped to entential their visitors. entertain their visitors.

Mr. Storey moved a vote of thanks to the Entertainment Committee and to the members of Council who had lent their motor-cars for the use of the visitors.

Mr. BADGER seconded Mr. Storey's motion, which was

agreed to.

#### BRITISH PHARMACEUTICAL CONFERENCE

The Education Committee recommended that the president, vice-president, Mr. Todd, and the secretary represent the Society at the Cheltenham Conference.

The Secretary said that Mr. Hardy and Mr. Todd could not go. The recommendation was agreed to, and it was also decided to ask the registrar (Mr. W. D. L. Greer) to attend.

#### EDUCATION COMMITTEE

The report of the Education Committee contained the following:—"It was resolved that the following, who submitted certificates from the undermentioned bodies, be granted the Preliminary certificate of apprentice to a pharmaceutical chemist :-

Gordon Smyth, 425 Antrim Road, Belfast, Preliminary of Queen's University, Belfast; William Press, 38 Sandhill Gardens, Belfast, Preliminary of Royal College of Physicians and Surgeons, Ireland; Samuel Alexander Kerr, Physicians and Surgeons, Ireland; Samuel Alexander Kerr, The Oaks, Laurencetown, co. Down, Junior Grade Certificate of the Ministry of Education, Northern Ireland; Hugh Baird, 946 Crumlin Road, Belfast, Preliminary Examination of the Queen's University, Belfast; James Anderson Brown, 33 Mountjoy Street, Belfast, Preliminary Examination of the Royal College of Physicians and Surgeons, Ireland; Thomas Andrew Pullin, 473 Ormeau Road, Belfast, Junior Grade Certificate of the Ministry of Education, Northern Ireland; Norman Alexander Millar, 2 Deacon Street, Belfast, Preliminary Examination of the Royal College of Physicians and Surgeons, Ireland; James Donis Goyer, 9 Pacific Avenue, Belfast, Junior Grade Certificate of the Ministry of Education, Northern Ireland.

Arising out of a query in the minutes of June 15 regarding apprenticeship in the Free State, the following letter was received from the Society's solicitor.

"I have considered the queries which you submitted to me this morning as follows:-

(1) Can apprenticeship to a person who is on the Register of Pharmaceutical Chemists in Northern Ireland but practising as a registered druggist in the Free State, and (2) can apprenticeship to a person on the Pharmaceutical Register in Northern Ireland but practising as a pharmaceutical chemist in the Free State, be accepted by the Pharmaceutical Society of Northern Ireland?

I think the terms of Section 6 (4) are quite clear on this point. Any person who wishes to take the ordinary final examination under Part IV of the Second Schedule to the Act must have been granted a Pre-liminary certificate as an apprentice, or certificate as an assistant to a pharmaceutical chemist under the provisions of Part V of said Schedule after the passing of the Act, or more shortly, only those who after the passing of the Act have served their apprenticeship under your own jurisdiction can be admitted to your Final examination."

The Secretary said he had got the solicitor's opinion, and there was nothing to prevent a student attending classes before he started to serve apprenticeship. Before he sat for examination he must be an apprentice. The report was adopted.

#### LAW COMMITTEE

taken on the question of compounding in union dispensaries raised by Mr. Culbert at last meeting of the Council. The Law Committee recommended that no action be

On the question of druggists' representation on the Council, the Committee agreed with the recommendation of the Home Office, that the druggist representation on the Council be reduced by one in 1928 and one in 1929, and subsequently on the merits.

On the motion of Mr. Storey, seconded by Mr. Badger, the minutes of the Committee were adopted.

#### THE JUNE EXAMINATIONS

Attention was drawn to the success of students of Attention was drawn to the success of students of Ballymena Technical School at the examinations, and it was decided to send the congratulations of the Council to the principal. It was also decided to have a photograph of Mr. A. T. Hardy hung in the rooms, as he was the first male candidate to become a pharmaceutical chemist in Northern Ireland under the new syllabus.

Mr. Hardy returned thanks on behalf of his son.
On the motion of Mr. Gibson, seconded by Mr.
Edwards, authority was given for the sealing of the

certificates.

#### QUEEN'S UNIVERSITY EXAMINATIONS

The results of the pharmaceutical preliminary examina-ons from Queen's University were submitted as tions from Queen's submitted as follows :-

Passed the Pharmaceutical Preliminary: Archibald Anderson, Hugh Baird, Wm. J. McLeod, Gordon Smyth, and Nora H. Strain,

The following have received credit for four subjects in the Matriculation examination: Jas. L. Kingscross—English, mathematics, mechanics, chemistry; William A. Norris—mathematics, physics, French, history.

The following have received credit for three subjects in

The following have received credit for three subjects in the Matriculation examination: John Brannigan, mathematics, chemistry, history; Florence A. Heaney—English, chemistry, geography; Agnes B. Hill—English, mathematics, French; Jane W. Ireland—English, French, botany; John Kerrigan—mathematics, mechanics, geography; Wm. Mc. Ross—English, physics, French; Samuel S. Wilson—English, French, history.

Wilson—English, French, history.

The following have obtained credit for four subjects in the Pharmaceutical Preliminary examination: William H. Boyd—English, mathematics, history, geography; John Brannigan—English, mathematics, chemistry, history; Agnes B. Hill—English, mathematics, French, history; Jane W. Ireland—English, physics, French, botany; John Kerrigan—mathematics, mechanics, French, geography; James L. Kingscross—English, mathematics, mechanics, chemistry; William H. Norris—mathematics, physics, French, history; Wm. McC. Ross—English, physics, French, chemistry.

The following have obtained credit for three subjects in

The following have obtained credit for three subjects in the Pharmaceutical Preliminary examination; Edward A. Bourke—mathematics, mechanics, history; Robert B. Boyle—English, chemistry, history; Florence H. Heaney—English, chemistry, geography; Sarah J. McGifford—English, mathematics, history; Mary E. Maguire—English, French, botany; Samuel S. Wilson—English, French, history.

The following passed in the Pharmaceutical Preliminary examination: William J. McLeod, Nora H. Strain.

#### OTHER BUSINESS

It was decided to hold the annual meeting on October 1 next

Mr. John William Waldren Agnew, 108 Croxted Road, West Dulwich, London, was elected a member of the Society.

It was decided to have no meeting in August

#### Summer Outings

#### West Ham Garden Party

On July 12 the members of the West Ham and District Association of Pharmacists and their friends assembled in force at Deepdene, Woodford (the residence of the president), for their annual garden party. On arrival they were received by Mr. W. J. Beardsley and Mrs. Beardsley, and the weather was ideal for the function. Clock golf, tennis and competitions of various kinds had been arranged, all of which were enthusiastically indulged in till tea-time. After tea the vice-president, Mr. J. Thomson, presented Mrs. Beardsley with a handsome cut-class wase on behalf of the Assowith a handsome cut-glass vase on behalf of the Association, as a small token of appreciation for all she had done for its welfare during her husband's presidency. Mrs. Beardsley then acknowledged the gift in an excel-lent speech, saying how much she enjoyed meeting the members, and hoped she would continue to have many more happy hours with them in the years to come. Dancing was indulged in from 7 to 10 p.m.

#### Staff Outings

The staff of Hall, Forster & Co., Ltd., Newcastle-on-Tyne, held their annual picnic on July 16, journeying by charabanc to Brampton, Cumberland. After luncheon at the Howard Arms Hotel the party were conveyed to Talkin Tarn, where sports were held. After the con-clusion of the sports boating on the lake was indulged in. The weather was excellent, and a very enjoyable day was spent.

An extremely enjoyable day was spent at Margate on July 21, the occasion being the annual staff outing of the employees of Dudley & Co., Ltd., London, N. About 200 were present at the luncheon, and everybody appeared

to be in the best of spirits. In proposing the toast of "The Firm," Mr. Harvey stressed the necessity in work, as in pleasure, for that team spirit which not only brings prosperity to all concerned, but also makes our journey in life a happier one. Suitable replies having been made, the party broke up to enjoy themselves in their own particular ways.

THE staff of Willows, Francis, Butler & Thompson, Ltd., manufacturing chemists, London, E.8, left Shacklewell Lane by charabancs on July 14 for their annual outing. Dimner was partaken at the Railway Hotel, Hellingly. Mr. Henry Thompson occupied the chair, and a presentation of a clock was made to Mr. Savill, the late secretary of the outing, for his past services. During the afternoon the party visited Eastbourne, where bathing was the chief attraction. A halt was again bathing was the chief attraction. A halt was again made at Hellingly for tea, and London was reached at 11 p.m., after a most enjoyable day.

THE wholesale staff of Stone & Son, Ltd., chemists, Fore Street, Exeter, had their annual outing recently, the venue being the Tintagel district of North Cornwall. The party which was accompanied by the directors, first stopped at Launceston and then went on to Boscastle, where luncheon was taken. In the course of the meal the managing director, Mr. Fleetcroft, made a short speech, referring to the harmony existing between the employers and their employees, and thanked the staff for the efforts they had made in furthering the company's interests. The journey was then resumed to Tintagel, and tea was taken at Bude. On the homeward journey a halt was made at Crockernwell, where music and dancing was the final item.

A COMBINED outing of the staffs of the London, Cardiff and Liverpool houses of Francis Newbery & Sons, Ltd., and Newbery's Agencies took place on July 21. The venue was Stratford-on-Avon. The party from Cardiff arrived at 10.30 a.m., and from London and Liverpool about an hour later, and at noon well over 200 sat down to lunch at the Swan's Nest Hotel, which was the head-quarters for the day. In the afternoon the usual sports were held, and it will be seen that Cardiff held its own were held, and it will be seen that Cardiff held its own against the many competitors from the other three houses of the company:—Barrow Race: (1) Miss Doris Davies and R. Dupuy (Cardiff), (2) Fairbrass and Lash (Newbery's Agencies); 100 Yards, Gentlemen: (1) Fairbrass (Newbery's Agencies), (2) Griffiths (Cardiff), (3) Wilson (London); Egg and Spoon: (1) Miss Dorothy Davies (Cardiff), (2) Miss Loyley (Cardiff), (3) Miss Read (London); 100 Yards, Ladies: (1) Miss Loyley (Cardiff), (2) Miss Doris Davies (Cardiff), (3) Miss Maskell (London); Three Leg Race: (1) Messrs. Marks and Garner (London), (2) Messrs. Flint and Floak (London); Veterans 100 Yards Race (over 35 years of age): (1) Mr. J. Smith (London), (2) Mr. W. J. Williams (London), (3) Mr. H. W. Edwards (Cardiff). In the tennis tournament, London, represented by Miss Austen and Miss Read, were the winners against the other three. Tug af War: Men—London, captained by Mr. Bradshaw, beat Cardiff. Ladies—Cardiff, captained by Miss Loyley, beat both London and Newbery's Agencies. Cricket, Time Match: Cardiff beat London by 34 to 31 runs. There Cardiff. Ladies—Cardiff, captained by Miss Loyley, beat both London and Newbery's Agencies. Cricket, Time Match: Cardiff beat London by 34 to 31 runs. There was a charabanc tour to the various places of interest and the party also enjoyed the fine boating on the Avon. The prizes were presented by Mrs. W. J. Williams, Miss Phillips and Mrs. H. W. Edwards, after tea, and letters and telegrams were read from, among others, Mr. A. Newbery, the chairman of the company, and the Misses Newbery. Amongst directors present were Messrs. W. J. Newbery, the chairman of the company, and the Misses Newbery. Amongst directors present were Messrs. W. J. Williams (London), C. Phillips (Agencies), and E. G. T. Loyley (Cardiff), also Mr. M. Greening, general manager of the Liverpool house. All the staffs were enthusiastic in the enjoyment of the day, which was largely due to the unflagging energy and originality of the general organiser, Mr. W. H. Morgan, of Cardiff house, assisted by Mr. W. E. Bailey (London), and Miss F. Gerhold (Agencies). (Agencies).

A BICENTENARY MEDAL -J. S. Fry & Sons. Bristol, have had medals struck at the Royal Mint to commemorate the two hundredth anniversary of the founding of their business. One in gold has been accepted by the King.



# Recent Biochemical Discoveries in Relation to Pharmacy

I HAVE selected as my subject for this address certain aspects of biochemistry which I believe to be of particular importance to all of us who are engaged in the practice of pharmacy. Biochemistry is chiefly concerned with the application of the principles of chemistry to the study and interpretation of the phenomena of life, and I think all of us must have followed to some extent the immense amount of biochemical investigation which has been done during the

has been done during the last few years, and which is still being prosecuted with great vigour and success. As the outcome of this work we as pharmacists are dealing with materials many of which cannot be controlled by purely chemical means; but most of them can be assayed and standardised by biological methods, and it is necessary that we should be acquainted with these methods. It is true enough that in the past pharmacists have played an honourable part in relation to medicine, by contributing expert knowledge of the nature and preparation of the drugs which the medical practitioner has required. To retain that function, we must adapt ourselves to new conditions and we must keep ourselves informed as to the trend of modern medicine.

The time at my disposal is short, and therefore, at the risk of appearing to have made an arbitrary selection, I feel bound to confine my remarks to the biochemical substances which to-day are most freely prescribed, and which hold the most prescribed.

hold the most prominent place in medical practice. Even thus restricted the field is enormous, and I shall attempt but little more than to speak of the practical applications resulting from the study of the hormones and the vitamins, both of which continue to arouse scientific interest in increasing intensity.

#### HORMONES

The hormones may be described as active substances with specific functions which exist in animal glands. They are in effect the natural medicaments which the animal body makes for the control of its own functions. In the living creature hormones are secreted by certain of the glands of the body, being passed from these glands direct into the blood stream. They rival the most potent of the vegetable alkaloids in the intensity of their action, which is that of modifying, stimulating, depressing, or regulating in other ways the activities of the body and its organs. To-day several of these substances

have become regular products of chemical industry, and play an important part in the treatment of disease, although it is not always that their therapeutic action corresponds to their normal physiological function. This point is well exemplified in the case of adrenalin, which is used for its effect in raising the blood pressure. The natural function of this hormone secreted by the suprarenal gland is still somewhat obscure in spite of much research, but it is

much research, but it is certainly not necessary for maintaining normal blood pressure.

Adrenalin was the first of the hormones to be of the hormones to be separated in a state of purity, and it is the only one included in the current edition of the British Pharmacopeia. Adrenalin was also the first of the hormones to first of the hormones to be synthesised. The synthesis of the racemic compound was first compound was accomplished, and then the resolution of this with separation of the levo rotatory isomer, identical with the natural base in every way, soon followed. There now seems strong ground for suggesting that in the next edition of the British Pharmacopæia the monograph on adrenalin should be re-vised so as to include the synthetic product. I shall be able later to refer to certain aspects of the work of the Commission which, as a result of the recommendations of the Subof of the committee Committee Civil Research of the Privy Council, has been en-trusted with the work of preparing future



Mr. R. R. Bennett, B.Sc., F.I.C., Ph.C. Chairman of the British Pharmaceutical Conference, 1928.

issues of the British Pharmacopæia.

#### THE PITUITARY GLAND

The pituitary gland consists of portions having different morphological origins and different functions. The larger portion, i.e., the anterior lobe, appears to be essential to life, and the dried gland or its extract is reputed to stimulate growth in certain cases of infantilism. It is well known that hypo- or hyper-secretion of the anterior lobe of the pituitary leads to a corresponding hypo- or hyper-activity of the ovary and testes. Investigations now proceeding have shown that two distinct substances, one producing æstrus and the other inhibiting æstrus, are present, but so far attempts to characterise the active constituents have not resulted in the isolation of active principles. The posterior lobe of the pituitary gland yields an extract exhibiting a complex of intense activities. Its effect in stimulating uterine contractions

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-referred to as its oxytocic activity-has made it a valuable drug in obstetrics, while its ability to restore a collapsed blood pressure or paralysed intestinal function has led to its employment in general surgery and after abdominal operations. While our chemical knowledge of the pharmacologically active constituents of the posterior lobe remains meagre, a separation of some of the active principles has recently been effected. It has been shown that by fractionation of an aqueous extract it is possible that by fractionation of an aqueous extract it is possible to obtain on the one hand a portion which responds almost entirely to the oxytocic method of assay, and hardly at all to the blood-pressure method, and on the other hand a portion which has pronounced pressor properties and practically no oxytocic action. Thus the physician, if he wishes it, will now be able to obtain these two important principles of the pituitary posterior lobe in separate solution, each standardised in units of activity. The diuretic-anti-diuretic effect of pituitary is associated with its pressor activity, but whether the two associated with its pressor activity, but whether the two effects are due to the same substance is not certain.

effects are due to the same substance is not certain.

For years pituitary extract has formed an indispensable part of the equipment of the obstetrician and of the surgeon, but it is not in the present British Pharmacopæia, and until recently in this country there has been no official standard of activity. In the United States Pharmacopæia the oxytocic method of assay has been adopted, and the activity of an extract has been measured by determining its capacity for causing contraction of isolated uterine muscle. This method for testing commercial pituitary extracts has been recognised by the League of Nations Committee on Biological by the League of Nations Committee on Biological Standards, and in Great Britain by the Therapeutic Substances Act, and it is now obligatory on manufacturers to state the strength of their preparation in units. A quantity of dried acetone-extracted posterior lobe in powder form, a portion of the International standard, is kept at the National Institute for Medical Research at Hampstead, and forms the standard for Great Britain. The specific activity corresponding to that yielded by 0.5 milligram of the standard powder is the recognised oxytocic unit. It is maintained by many that there is need for a blood-pressure method of assay in addition to the oxytocic test, and this matter will no doubt be considered by those upon whom will fall the duty of defining biological standards in the next issue of the British Pharmacopæia.

THYROXIN

Desiccated thyroid gland is one of the few biological substances in the present Pharmacopæia, and for many years it has been freely prescribed. Long before the active principle of the thyroid gland was identified it was recognised that the absence of the gland, or defects of its secretion, led to a remarkable retardation of meta-bolism with a state of apathetic idiocy, and in the young to a stunting and deformity of growth. The administra-tion of dried thyroid gland is notable in that it was the

tion of dried thyroid gland is notable in that it was the first example of true substitution therapy, and inasmuch as it is effective when given by the mouth. Ingestion of the dried gland, or of thyroxin, its active principle, produces the same effects in the body as the thyroxin naturally secreted by the healthy gland.

The preparation in recent years of thyroxin, the iodine-containing hormone, in practical quantities from the gland, and later its artificial synthesis, must rank as great practical triumphs. Following the discovery by C. R. Harington of an improved method of extracting thyroxin from thyroid gland which very greatly increased the yield, the natural product became available at a price which made it possible for medical men to administer the pure hormone at a reasonable cost. Later the researches of Harington and Barger were carried to a further most important stage, resulting in the successful synthesis of thyroxin. The large-scale production of thyroxin from the thyroid gland and its synthesis on a manufacturing scale are striking examples of the on a manufacturing scale are striking examples of the direct collaboration of British chemical manufacturers with the medical and chemical workers in hospitals and universities. In spite of the very complex nature of this synthesis, the commercial production of synthetic thyroxin, identical in its action with natural thyroxin,

was quickly accomplished, and it is now available at a cost of only one-half that of the natural product.

The dry thyroid of the British Pharmacopæia is an

unstandardised preparation, and it is well known that, although the fresh gland contains an average amount of 0.04 per cent, of iodine in organic combination, this percentage is subject to considerable variation at different times of the year, and according to the saline constituents of the animals' food. When thyroxin comes into more general use for therapeutic purposes it will possess the great advantage over dry thyroid that a definite amount of active substance will be administered.

#### THE OVARIAN HORMONES

There are other hormones on which investigation is actively progressing. Such are the hormone of the parathyroid gland with its controlling influence on the calcium balance of the blood and tissues, and the complex of hormones found in the ovary which modify the sex cycle in the female. Our knowledge of the latter is very in the female. Our knowledge of the latter is very meagre, most of the work having been carried out on the cestrus-producing hormone, which is also present in the placenta. One kilo of fresh placenta gives from 150 to 200 units, the unit being the smallest dose required to produce estrus in ten out of a series of twenty ovariectomised rats. The question of the clinical appliovariectomised rats. The question of the chinical application of an ovarian extract which produces æstrus in animals is approached with caution, since it is bound up with the still uncertain relation of menstruation to æstrus. There are many directions in which clinical results might be expected to follow administration of ovarian extract in suitable doses, and it is possible that injections may be of value in hastening the onset of menstruation in cases of delayed puberty. We still have menstruation in cases of delayed puberty. We still have far to go in our understanding of these functions, and there is much need for co-ordination of the work which has so far been published.

#### INSULIN

I cannot leave the subject of the hormones without referring to insulin, the hormone derived from the pan-creas. By some delicately adjusted mechanism, insulin is continually supplied and used up in the tissues of a healthy animal, and through its action and that of other hormones, and the nervous system, the concentration of the sugar in the blood is maintained within a narrow range of variation from the average. Many years elapsed between the discovery that removal of the pancreas produced diabetes mellitus and the successful separation of the hormone now known to all the world as insulin. The introduction of this substance for the treatment of diabetes mellitus is one of the greatest contributions, and perhaps even the greatest contribution, ever made to the medical treatment of a presific disease and to the medical treatment of a specific disease, and it provides the second example of successful substitution therapy. The production of insulin was the outcome of a discovery made by a band of workers in the University of Toronto. The large-scale manufacture was undertaken in this country in the beginning of 1923, the technical difficulties incidental to the production of this fugitive substance were quickly overcome, and in a short space of time insulin became available to all who required it. By the close co-operation of physiologists and chemists the process of extraction and purification of insulin has been so improved that its price is now approximately onetenth of what it was when it was first placed on the market, and its purification has been so perfected that each clinical unit now contains no more than 1/20th milligram of solid insulin hydrochloride, and 12½ grams will account for the disappearance of half a ton of blood sugar.

Insulin differs from adrenalin and thyroxin inasmuch as its exact chemical structure is still unknown. So far no one has discovered a method for producing insulin it belongs is not yet certain. A few synthetic substitutes for insulin have been put on the market, and the first of these was synthalin, a guanidine derivative, namely, diguanidylnonane, which when taken by the mouth causes a definite, though delayed, fall of blood

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sugar, and a depression of new carbohydrate formation. The same guanidine derivative is thought to be a constituent of another anti-diabetic preparation issued under the name of glukhorment. Synthalin has in its favour that it can exert its action after oral administration, but clinical reports show that its effective dose and its toxic dose lie so close together that there is little reason to expect that it will come into general use as a substitute for insulin. The real usefulness of synthalin lies only in the encouragement its discovery brings to the further investigation of synthetic compounds having an insulin-like action when administered by the mouth.

#### LAVER EXTRACT

The latest addition to the list of biochemical products which are now at the service of the physician is liver extract. The treatment of pernicious anæmia by including raw liver in the daily diet was introduced in 1926, and looking back it appears strange that a simple and efficient means of treating this hitherto incurable malady has always been ready at hand, and yet has only been recently recognised. The use of liver is a direct application of experimental work carried out on the cure of secondary anæmia in dogs, and it is a particularly interesting fact that one of those who took a leading part in the work owes his life to insulin, on the heels of which this new discovery has followed so closely. The "whole liver" treatment was followed by very encouraging results, but the treatment had drawbacks, not the least of which was the fact that relatively few patients could tolerate a daily ration of half a pound of raw or lightly-cooked liver—the quantity recommended to produce optimum results. There was also the danger of over-cooking the liver in the attempt to make it more palatable, with consequent destruction of much of its therapeutic activity.

It is now known that a liver extract can be prepared which is just as efficacious as the whole liver, and the production on a manufacturing scale during the past few months of a water-soluble liver extract in powder form containing in small bulk the therapeutic activity of the original fresh liver is of outstanding importance. Chnical trials instituted by the Medical Research Council have been reported in the medical Press. In these trials the activity of the liver extract was gauged by the increase of the reticulated red cells in the circulating blood. The rise in the percentage of these reticulated red cells (reticulocytes) has been shown to reach a maximum in about fifteen days, while in a number of cases the count of the red blood corpuscles has risen from 750,000 to 5,000,000 per cubic millimetre of blood after treatment for a few weeks. Throughout the work the results with liver extract were found to be exactly parallel with those obtained with raw liver. The constituents of the liver extract which are responsible for its remarkable effect upon pernicious anaemia have not yet been identified, but a great deal of research is being directed towards a solution of this problem.

#### VITAMINS

It was about fifteen years ago that F. G. Hopkins first proved that nutrition does not depend upon digestion and assimilation of proteins, carbohydrates, fats, salts, and water alone, but that in minute amounts certain other factors are imperatively necessary. Within recent years results which have attended the experimental study of these accessory factors and the specific physiological processes which they control have overshadowed everything else in nutrition. Comparatively little is known of these obscure substances so far as their chemical composition and physical properties are concerned, but it is recognised that vitamins are necessary to the life and well-being of man, and must daily form a part of any diet which is to maintain health and strength. The story of the dependence of animal life on the vegetable world for the supply of vitamins, incomplete though the tale remains to-day, teaches much that is of practical significance in daily life, since it has a most important bearing on the maintenance of the bodily health of the populace. Of still greater importance is

the far-reaching effect it may have on the physique of the race, by enabling us to correct errors in the feeding of children.

A knowledge of correct nutrition has a direct bearing on the prevention of disease. The inadequate intake of the appropriate vitamins is the cause of scurvy, rickets and beri-beri, and probably plays an important part in the initiation of dental decay. It is impossible to fore-tell how much light future advances in nutritional problems may throw upon certain aspects of preventive medicine. Many questions, both of general scientific and practical interest, still await investigation. Much of our knowledge so far has been derived from animal experiments, and the conclusions drawn have been applied to mankind, but the results may also greatly influence the problems which face those whose business it is to breed and maintain animal stock. The researches on vitamins have attracted much attention, but certainly not more than they deserve. The discoveries in this field redound greatly to the credit of British scientific workers who have done brilliant pioneer work, while it is no less interesting to record that British fine chemical manufacturers have kept themselves in close touch with the latest researches, and have been quick to render the results of scientific discoveries available to the medical profession and to the public. Further, it has become the business of all engaged in the manufacture of foodstuffs to review, and to modify, processes as well as manufacturing plant, so as to conform with new knowledge.

#### VITAMIN D

Vitamin D is the factor in food of which a deficiency causes symptoms of a kind most strikingly seen in rickets. The signs of deficiency may be seen in all degrees up to an extreme of deformity shown in an ill-shaped skull, a narrow chest and distorted limbs. The fundamental discovery that rickets is a deficiency disease was made by Edward Mellanby. This completely reorientated the problem of rickets, and stimulated investigations in all the laboratories engaged in nutritional problems. The discovery was quickly followed by the announcement that the absence of the anti-rachitic factor in food had a profound influence upon the formation of enamel and dentine in the developing teeth, which led at once to special investigation upon the relation of vitamin-D deficiency to dental disease.

vitamin-D deficiency to dental disease.

It was next realised that vitamin-D deficiency was counteracted in some obscure way by the effects of summer sunshine, and also it was observed that rickets could be cured by irradiating the bodies of children with ultraviolet light. This new knowledge brought great practical benefits wherever it was applied, but science could offer no explanation either of the nature of the vitamin, the mode of its action, or the meaning of the similarity between its action and that of light on the animal or child. Before long, however, various investigators found their way along the right line, and it was announced that many types of food would yield on irradiation the anti-rachitic vitamin. The next step was to try the effect of ultra-violet light upon the various constituents of food, and by a process of elimination it was found that the compounds which could be activated always contained fats and finally it was thought that anti-rachitic activity was conferred upon cholesterol, a complex fatty alcohol present in many foods and widely distributed in the animal body, occurring perhaps most familiarly in undressed wool and in the natural grease of animal and human skin.

At this point the explanation of one of the beneficial effects of sunshine was approached. There seemed to be little doubt that sunshine acted by causing the production of vitamin D from the cholesterol-like substance present in the sebaceous glands of the body surface, the vitamin then being caught up in the blood stream. Next, evidence was obtained that not cholesterol itself, but some closely related substance, inscparable from it by the ordinary methods of purification, was the parent of the essential vitamin. It was found that the impurity accompanying natural cholesterol was itself a sterol, and experiments were made with ergosterol, a sterol occurring in ergot

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and other fungi and also in yeast. Ergosterol was thought to have a structure likely to give it the required properties, and it was soon shown that the absorbent action of ergosterol on ultra-violet rays was about 2,000 times as great as that of ordinary cholesterol. There is now no doubt that ergosterol, with possibly some other closely similar unknown sterol, is associated in small quantities with cholesterol as obtained from natural sources, and is the precursor of the vitamin formed when sources, and is the precursor of the vicanian formed when cholesterol is irradiated. Ergosterol is in effect a readily available source of an astonishingly potent preparation of vitamin D, a daily dose of one-hundred-thousandth part of a milligram sufficing to initiate healing in established

cases of experimental rickets in laboratory rats.

As the result of a long chain of investigations thus briefly reviewed, vitamin D is available in an isolated form, and it has become possible to examine its properties without complications introduced by the presence of its common associate in nature, the growth-promoting vitamin A. It has been shown that vitamin D is necessary to ensure proper assimilation of food, particularly of the elements calcium and phosphorus which are essential for the proper formation of bones and teeth. Lack of this vitamin leads to faulty formation of bones and teeth in vitamin leads to faulty formation of bones and teeth in children, and favours dental decay in adults, particularly in the case of pregnant women. Hitherto human beings have been almost entirely dependent for their normal supplies of vitamin D upon the effects of the sun's rays upon their own bodies, and upon those of cows, through which the vitamin is transmitted to milk and butter. Supplementary supplies have had to be obtained from cod-liver oil, which contains vitamin D to a variable extent, and from ultra-violet light treatment. To-day the position is changed, and irradiated ergosterol is available to all. It can be obtained in various palatable and to all. It can be obtained in various palatable and popular forms, and it is also available to manufacturers of foodstuffs, which by the addition of irradiated ergosterol can, with small cost, be made equal in vitamin-D content to summer butter, or to any other required standard. In a recent contribution from the Pharmaceutical Society's Pharmacological Laboratories, the assay of vitamin D is described and a method of expressing the potency of any preparation is given. The unit of antirachitic activity which has been adopted is the activity of one-tenthousandth of a milligram of a standard sample of itradiated expressions. irradiated ergosterol which, given once a day for ten days, is enough to bring about complete healing of rickets induced in a rat prepared on a rachitogenic diet under specified conditions.

I have spent much of my time in giving an outline of the production and properties of vitamin D. My excuse for this preference is that since it can be produced from a known chemical substance, our knowledge of vitamin chemistry seems to be more complete in the case of this vitamin, and further it is generally possible by a proper regulation of diet to obtain vitamins A, B. C and E in quantities sufficient to sustain health, but in a comparatively sunless country such as ours, the importance of an extra-dietary source of vitamin D cannot be overestimated.

VITAMIN A

From vitamin D one can pass to the consideration of another fat-soluble vitamin, namely, vitamin A. Although comparatively little is known of the chemical nature and affinities of vitamin A, it is believed to be either a sterol or a body closely related to a sterol. It promotes and is essential to proper growth, and it helps to maintain the body's resistance against infection. Lack of it in the diet of the young leads to cessation of growth, and in both young and adults to inflammation of the respiratory tract, while the cust was presented and the corresponding to the while the eyes may become inflamed, and the cornea may ulcerate, leading to complete blindness. In rats absence of this vitamin from the diet is frequently associated with the presence of urinary calculi and abscesses in various parts of the body. Further, the view is held that there may be some relationship between deficiency of vitamin A and pernicious anæmia.

Vitamin A is found in milk, cream and butter, in eggyolk, in mutton and beef fat, and in green vegetables. is present also in the liver of many fishes and in the livers of birds and herbivorous mammals. The presence of vitamin A in foodstuffs can be demonstrated by means of a simple colour reaction, and this, together with confirmatory growth tests on animals, has allowed the investigation of its distribution in nature. Until recently cod-liver oil was thought to be the richest extra-dietary source of vitamin A, but it is now known that the amount of this vitamin present in other liver fats in many cases exceeds that found in cod-liver oil. The problem of the deficiency of vitamin A in milk and butter and the inadequacy of the total supply of milk fat for the needs of the population can now be met by the artificial addition of vitamin A to the diet without recourse to cod-liver oil. At present there is no satisfactory biological standard available for vitamin A. The United States Pharmacopæia has adopted as a unit for vitamin A present in cod-liver oil, the least amount of oil which will lead to a given increase of weight, within a given time, in a rat which has ceased to grow previous to the administration of the oil, when fed on a given diet. It has been pointed out elsewhere that such a unit must show great variation, and the definition offends the first canon of physiological standardisation, inasmuch as a unit should always represent an amount of activity present in a given weight of a stable standard.

#### VITAMIN B

Vitamin B occurs in yeast, seeds, nuts, potatoes and some of the root vegetables. In cereals it is chiefly present in the seed germ, so that the refinements of modern milling for the production of white flour and white rice lead to the removal of vitamin B from products which are considered to be staple foods. Seed germs, yeast extracts and malt extracts are commercially available sources of vitamin B. Deficiency of this vitamin leads to loss of appetite, gastro-intestinal trouble, and constipa-tion. Lack of vitamin B in the diet is also associated with human beri-beri, and pellagra and avian polyneuritis. The physiological function of vitamin B in the animal economy is under active investigation at the present time, and some information has already been obtained as to its chemical nature and properties. The substance which has chemical nature and properties. The substance which has hitherto been called vitamin B is now known to consist of at least two components with different chemical porperties and different physiological functions. These two factors have been described as B1 and B2. B1 is thermolabile and is the antineuritic factor which prevents polyneuritis in birds and paralysis in rats, while B2 is thermostable and is probably identical with the "pellagra preventive" which prevents human pellagra. Both B1 and B2 are known to be precedent to the prevents of the prevents polyneurities and its probability of the prevents preve be necessary for the growth of rats. It seems possible that the designations B1 and B2 may later be discarded, perhaps even in favour of the proper names of well-defined chemical compounds, the isolation of which we may hope will eventually be followed by their synthesis in the laboratory, as in the case of vitamin D.

#### VITAMIN C

Vitamin C occurs in many fresh fruits, especially in those belonging to the citrus family. The curative effect of lemon juice and orange juice in the treatment of scurvy has been known for more than 200 years, and this effect therefore long precedes our knowledge of accessory food factors in any chemical sense. Vitamin C occurs also in lettuce and tomatoes and in fresh meat occurs also in lettuce and tomatoes and in fresh meat and milk. Among the symptoms of scurvy due to deficiency of vitamin C in the diet are hæmorrhages in various parts of the body, including the gums. Lack of vitamin C may be accompanied by loss of body weight, swelling of joints and loosening and decay of the teeth in which well defined histological changes can be accounted. One of the methods for assexing the vitamin-C observed. One of the methods for assaying the vitamin-C content of a foodstuff is based upon the determination of the minimum protective dose which allows the production of normal teeth in young growing guinea-pigs. If a quantity of sweet orange juice is taken as a standard protective dose, the amount of the foodstuff under test which protects a group of animals may be said to have a vitamin-C potency equivalent to the standard. It is probable that the much greater consumption of fresh fruit in this country during recent years is a contributing

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factor in the improved health and increased longevity of the people of to-day.

#### VITAMIN E

Vitamin E, like vitamin A and vitamin D, is fatsoluble. It is known to occur in cereals, in green
vegetables, and in vegetable oils. Deficiency of vitamin E
causes sterility in experimental animals, but at present
its relation to the human economy is unknown. Vitamin
E is widely distributed, and lack of it does not appear
to be a problem of serious import at the present time.

#### BIOLOGICAL STANDARDS

A few months ago H. H. Dale delivered before an evening meeting of the Pharmaceutical Society an address in the course of which reference was made to the change which has been taking place during recent years, and is still in progress, in the whole outlook and orientation of therapeutic practice, and the inevitable repercussion of this change in therapeutics on its principal ally—pharmacy. Biochemical investigation is providing new materials and new methods, and more than ever before the pharmacist is dealing with remedies which can only be assayed and standardised by biological methods. The latest advances in biochemical knowledge have given additional prominence to the work now carried out in the Pharmaceutical Society's Pharmacological Laboratories. The steadily increasing demand for the services of these laboratories may be taken as symptomatic of the definite beginning of a new era in pharmacy.

Much criticism has been heard of the failure to intro-

Much criticism has been heard of the failure to introduce biological methods of standardisation into the current British Pharmacopœia. It must be borne in mind, however, that at the date of its issue the General Medical Council was unable to prescribe biological tests, or to introduce new remedies requiring such methods for their standardisation, there being at that time no official standards with reference to which the tests could be carried out, nor had they the power to enforce such standards in the absence of a laboratory where tests

could be made.

In 1925 the Therapeutic Substances Act was passed. It came into force in August 1927. This Act has set up a Joint Committee charged with the duty of prescribing standards, tests, and units of standardisation for therapeutic substances the purity and potency of which cannot be adequately tested by chemical means. By the Regulations made under the Act, standards have been defined for a number of such substances, laboratories have been appointed to prepare and keep these standards, and machinery for controlling their application has been created. The Pharmacopæia Commission which will soon come into existence will accordingly be able to introduce into the next Pharmacopæia any therapeutic substance for which a standard of reference has been defined by the Joint Committee constituted under the new Act, and to introduce a biological method for standardising any substance for which a standard has been defined.

The Pharmaceutical Society is to be congratulated upon having prepared itself in readiness for these inevitable changes by its policy of equipping laboratories for the prosecution of pharmacological research and testing, and by its recognition of the fact that biological methods are rapidly gaining importance in modern materia medica, and that the study of these methods must inevitably be given a proportionate prominence in the pharmaceutical curriculum of to-morrow. The future of pharmacy will depend upon the continued cultivation of the scientific habit of mind, and the power to confront new conditions and new difficulties with systematic knowledge and perfected technique.

Chinese Liquorice Root.—Liquorice is abundant in the Three Eastern Provinces and is mostly exported to foreign countries. To increase the revenue from liquorice the Mukden authorities have decided to issue certificates to those engaged in the business, requiring them to pay 10 cents special tax for every catty of liquorice sold.

#### Westminster Wisdom

Notes on Parliamentary Matters.

#### EFFECTS OF NOISE ON HEALTH

Replying to Captain Fraser, on July 23, Sir G. Hennessy stated that the possibilities of studying the effects of noise and vibration upon health and efficiency are at present receiving the consideration of the Industrial Fatigue Research Board, under the Medical Research Council.

#### NATIONAL HEALTH INSURANCE

The Minister of Health (Mr. N. Chamberlain) informed Major Carver, on July 19, that the possibility of widening the scope of voluntary insurance under the joint scheme of national health insurance and contributory pensions is still under consideration, but he had not yet found any satisfactory solution of the very serious difficulties which any such proposal presents.

#### ALLONAL

Mr. R. Young asked the Secretary of State for the Home Department, on July 19, whether the German drug Allonal is among those governed by the Dangerous Drugs Act; if not, whether he is aware of the growing demand for this drug and of the danger entailed in its use; and whether he will take steps to ensure that Allonal should not be available without a doctor's prescription?

Sir William Joynson-Hicks: The Dangerous Drugs Acts do not apply to Allonal which is understood to be the proprietary name given by a Swiss firm of manufacturing chemists to a derivative of barbituric acid. I am aware of the dangers and have brought the question of the need for further restrictions in the case of these drugs before the Inter-Departmental Committee which has been examining the law relating to poisons.

#### PATENT OFFICE

The Parliamentary Secretary to the Board of Trade (Mr. H. Williams), replying to questions put by Mr. Malone, on July 18, stated that the revenue of the Patent Office is derived mainly from fees received in connection with the granting and renewal of patents and the registration and renewal of designs and trade-marks. The estimated surplus of revenue over expenditure was, during the last ten years, £381,676; in 1925, £38,540; in 1926, £98,813; and in 1927, £112,939. The surplus is paid over to the Exchequer. The number of complete specifications filed in connection with applications for patents and awaiting first action by the examiner is about 6,300; during the present year these arrears have accumulated at an average rate of about 67 per week; the number of complete specifications filed in the first half of 1912 was 9,313, and in the corresponding period of 1928, 11,751; the number of the examining staff in 1912 was 262, and in 1928, 236. An addition to the examining staff has recently been made, and steps have been taken for further increasing the examining staff, as soon as the necessary arrangements can be made, to deal with the additional work.

QUININE SETTLEMENT NEAR.—The suit of the United States Government against the operations of the Kina Rureau in the United States seems to be on the way to fair settlement, says the New York "Drug Markets." It is reported that the United States Assistant Attorney-General has been successful in his negotiations with officials of the Kina Bureau in Holland, and that two of them (Mr. Van Linge and Mr. Camphuis) will go to the United States for further negotiations, and in order to work out the details whereby a consent decree may be entered. It is reported that American, German and Swiss quinine makers have already consented to decrees of similar nature in the civil suit. It was impossible for the Dutch to sign such a decree when in conference with the government officers abroad for the reason that to do so then would force them to violate agreements and contracts in force between the Kina Bureau and the Dutch cinchona planters.

#### Trade Notes

ROSOTTOS is the name of a highly concentrated synthetic otto of rose introduced by Ayrton, Saunders & Co., Ltd., 34 Hanover Street, Liverpool.

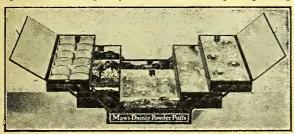
ALUMINIUM HOT-WATER BOTTLES of British manufacture are advertised in this issue by Corfield, Ltd., Trafalgar Works, Merton Abbey, London, S.W.19.

KAMBEROL is a preparation for warding off flies and midges, for human as well as veterinary use. The sole distributors are Meggeson & Co., Ltd., Bermondsey, London, S.E.16.

VEET.—Particulars of a special seasonal discount on orders for Veet (Dae Health Laboratories, Ltd., 68 Bolsover Street, London, W.1) will be found in the advertisement pages of this issue.

AZIADÉ CONCENTRATED SOLIDIFIED PERFUMES, each in a hand-coloured ivorine box, are supplied in show boxes containing one dozen assorted perfumes by Thos. Christy & Co., 4-12 Old Swan Lane, London, E.C.4.

S. Maw, Son & Sons, Ltd., 7-12 Aldersgate Street, London, E.C.1, have drawn our attention to the special display boxes which they have had designed. These are extremely compact (15 in. by 12 in. by 6 in. when closed). and, as will be seen from the illustration, the mode of operation is simplicity itself. The triple-expanding



bracket construction allows the complete range of puffs or other goods in stock to be arrayed before a customer almost instantly. Another idea of grouping all manicure requirements in a special glass-fronted protective show-card case is proving a sales help in many pharmacies.

WHITAKER'S WINDOW-DISPLAY COMPETITION.—The list of prize-winners in the jubilee window-display competition, conducted by Whitaker & Co., dye manufacturers, Kendal, appears elsewhere in this issue.

CLOSED FOR HOLIDAYS.—Thomas Morson & Son, Ltd., manufacturing chemists, 47 Gray's Inn Road, London, W.C.1, inform us that their works will be closed from July 28 to August 11, during which time only urgent orders can be dealt with.

THE LEAD SELENIDE COMPOUND, which is now in use at the Bristol Royal Infirmary for the treatment of cancer, has been designated B.R.I. Colloid (D48). It is supplied in ampoules of 10 c.c. and 15 c.c. for intravenous injection by The British Drug Houses, Ltd., London, N.1.

Packer's Shampoos.—J. C. Gambles & Co., Ltd., 211-215 Blackfriars Road, London, S.E.1, announce the introduction of two new Packer lines—Packer's Olive Oil Shampoo, which is delicately perfumed, and Packer's Pine Tar Shampoo. These are put up in two sizes, in screw-cap bottles, the mouth of which forms a sprinkler top.

British-made cocaine.—We mentioned last week (p. 62) that May & Baker, Ltd., manufacturing chemists, Battersea, S.W., had been granted a licence by the Home Office to manufacture and sell cocaine in this country. We understand that this is the first occasion on which the manufacture of cocaine by any firm in the United Kingdom has been permitted, and May & Baker, Ltd., are now in a position to offer cocaine and cocaine hydrochloride to those holding Home Office licences, at competitive prices.

#### Trade-mark Applications

The figures in parentheses refer to the classes in which the marks are grouped. A list of classes and particulars as to registration are given in "The Chemist and Druggist Dlary," 1928, p. 329.

(From "The Trade-marks Journal," June 27, 1928.)

"MAGNESIA" across device of cog-wheel; for toilet magnesia
(48). By The Washington Chemical Co., Ltd., Station
Road, Washington Station, Durham. 488,127. (Associated.)

ciated.)

Silhouette device of fantastic figure and animal; for perfumery, etc. (48). By M. A. Adler, 124 Great Portland Street, London, W.1. 489,105. (Associated.)

Silhouette device of woman's head; for toilet articles (48). By The Armand Co., 124 Des Moines Street, Des Moines, Iowa, U.S.A. 489,217. (Associated.)

"Melosta"; for perfumery, etc. (48). By P. M. Brooks, 17 Church Street, Norton, Malton. 491,016.

(From "The Trade-marks Journal," July 4, 1928.)
"IRGATAN"; for chemicals (1). By J. R. Geigy Société
Anonyme, 51-57 Riehenring, Basle, Switzerland, 490,232.

(Associated.)
"GRETNAX"; for chemicals (1). By The Caledonian Electro-Chemical Co., Ltd., 167 St. Vincent Street, Glasgow.

491,549, "GRESCOL";

Chemical Co., Ltd., 167 St. Vincent Street, Glasgow. 491,549.

"GRESCOL"; for a lotion for external treatment of grease in horses (2). By G. W. Burniston, 20 Albert Avenue, Hull. 485,243.

"ZOLA"; for animal medicines (2). By W. Gregory & Co., Ltd., 31 Fore Street, Wellington, Somerset. 489,767.

"TORNADOR"; for chemicals (2), and for goods (47). By A. Boake, Roberts & Co., Ltd., 100 Carpenters Road, Stratford, E.15. 491,882,884. (Associated.)

"BELLADENAL"; for medicinal chemicals (3). By Chemical Works, formerly Sandoz, 60 Fabrikstrasse, Basle, Switzerland. 481,138. (Associated.)

"UROTEX" and "Hytex"; for medicines (3). By The Knox Co., 206 New England Building, Kansas City, U.S.A. 490,074/075.

"DRUHEAL"; for an ointment (3). By H. Platt, 92 High Street, Golborne, Lancs. 489,203.

"PRAFORMIN"; for all goods (3) and (42). By Nordmark-Werke A.G. für Angewandte Chemie, Humboldstrasse 54, Hamburg 21, Germany. 490,746/747. (Associated.)

"Stel-Phit"; for medicated tablets (3). By I. A. V. Jones, 26 Saint James Road, Upper Tooting, S.W.17. 491,347.

"ICENE"; for surgical instruments, etc. (11). By Cooling Davices, Ltd., 45 Holborn Viaduct, London, E.C.I. 491,298.

"Condor" under picture of same: for toilet paper (39).

Devices, Ltd., 45 Holborn Viaduct, London, E.C.I. 491,298.

"CONDOR" under picture of same; for toilet paper (39). By F. J. Sabel, 21 Queenhithe, London, E.C.4. 488,818.

"ANT"; for goods (47) and for perfumed soap (48). By T. Hedley & Co., Ltd., Phœnix Buildings, Collingwood Street, Newcastle-on-Tyne. 491,669/670. (Associated.)

"KARA FOR THE HAIR" and "THE CELEBRATED ALCA" or label device including description and name and address of applicants; for hair lotions (48). By J. Stewart, Ltd, 225 Regent Street, London, W.1. B480,500/501.

(From "The Trade-marks Journal," July 11, 1928.)

"RAJAR"; for all goods (1) and (8), photographic accessories (13), and for goods (39). By Amalgamated Photographic Manufacturers, Ltd., 5 Soho Square, London, W.1. 486,214/215/216/309. (Associated.)
"Chromosa" on label device with name "Gevaert" ("Gevaert" disclaimed); for photographic plates (". By Photo-Produits Gevaert Société Anonyme, 23 Septe Straat, Vieux-Dieux, Antwerp, Belgium. 488,552.
"OZONOL" with initial letter forming head of man, the word "EAU" in place of teeth ("Eau" disclaimed); for disinfectants, etc. (2). By Ozonol Laboratories, Ltd., 24 Holborn, London, E.C.1. 437,935. (Associated.)
"STEVOLINE"; for chemical substances (1). By Steve's Emulsions, Ltd., St. Stephen's House, Victoria Embankment, Westminster, S.W.1. 489,913. (Associated.)
"GLIZ"; for anti-freezing chemical mixtures (1). By Lever Brothers, Ltd., Port Sunlight, Cheshire. 491,519.
"OgTeX" ("O.T." and "X" disclaimed); for chemicals (2). By B. C. Tipper & Son, Ltd., 43 Homer Street. Balsall Heath, Birmingham. 490,906.
"Wareley's"; for fertilisens, etc. (2). By Wakeley Bros. & Co., Ltd., Honduras Wharf, Bankside, London, S.E.1. 490,931.
"Dentiliser"; for sterilising compounds (2). By Asso-

"90,931."
"Dentiliser": for sterilising compounds (2). By Associated Products, Ltd., 31a Denmark Road, West Ealing, W.15. 491,415.
"ACE OF SPADES" under device of same on oval shape; for chemicals (2). By G. & V. Moreels Société Anonyme, 210 Boulevard du Petit Dock, Gand, Belgium. 492,292.

#### Births

Notices for insertion in this column must be properly authenticated.

PICKLES.—At 7 King's Parade, Church End, Finchley, London, N.3, on July 14, the wife of R. Garnett Pickles, Ph.C., of a son.

SCAMPTON.—At 123 Holdenhurst Road, Bournemouth, on July 19, Jessie, the wife of V. J. Scampton, M.P.S., of a son.

Walker.—At Higham's Park, London, E., on July 17, the wife of C. Walker, representative of Evans Sons Lescher & Webb, Ltd. (also only daughter of Mr. H. W. Hitching, representative of Evans Sons Lescher & Webb, Ltd.), of a daughter.

#### Marriages

GIBSON—BIRNIE.—At Imperial Hotel, Aberdeen, on July 13, Herbert Gibson, chemist and druggist, Inverallochy, to Laura Birnie.

GREENWOOD—LOMAX.—At St. Cyprian's Church, Edge Hill, Liverpool, on July 21, by Canon H. D. Morgan, M.A., LL.D., Stanley Earl Greenwood, M.P.S., Bolsover, Chesterfield, to Mary Shuttleworth, eldest daughter of Mr. Harold Lomax, M.P.S., 39 Jubilee Drive, Kensington, Liverpool.

HAYHURST—HOTHERSALL.—At St. Philip's Church, Nelson, recently, James Hayhurst, chemist and druggist, Railway Street, to Dorothy Hothersall, Garrick Street.

THOMAS-HOWELLS.-On July 12, John Owen Thomas, chemist and druggist, 110 Albany Road, Cardiff, to Evelyn J. Howells.

WILLIAMS-Brew.-At St. Anne's Church, Aigburth, Liverpool, on July 7, Rees Aled Williams, chemist and druggist (director of Prebbles, Ltd., chemists, Liverpool), to Margaret A. Brew, chemist and druggist, late of Prebbles, Ltd., Liverpool.

WILLIAMS—SADDLER.—At St. Martin's Church, Worle, on July 3, Evan Samuel Williams, chemist and druggist (Lewis Wing, Ltd., chemists, Weston-super-Mare), to Jean Margaret Saddler, Springfield, Worle.

#### Deaths

Beatton.—At Craig Bank, Port Glasgow, on July 10, Mr. Peter Samuel Beatton, chemist and druggist. Mr. Beatton qualified in 1891.

Davies.—Suddenly, at King's College Hospital, London, on July 19, Mr. Dan Davies, M.B.E., F.I.O., chemist and druggist, 324 Coldharbour Lane, Brixton, S.W., aged fifty-six. Mr. Davies gained his early phar-maceutical experience in South Wales and was afterwards in business with his brother, Mr. John Davies, chemist and druggist, Railton Road, S.W. Later, he commenced business on his own account at Coldharbour commenced business on his own account at Coldnarbour Lane, becoming well-known and extremely popular. Howas taken ill on July 17, but seemed somewhat better on the following day. Mr. Davies was keenly interested in Red Cross work, and it was in recognition of his services during the war—that he was awarded the M.B.E. In religious matters he was a devoted Worldward work. devoted Wesleyan, and was secretary and a sidesman of Herne Hill Wesleyan Church. Interment took place at Putncy Vale Cemetery, London, on July 23.

ELMITT.—At 200 High Street, Lincoln, on July 23, Mr. George Elmitt, chemist and druggist. Mr. Elmitt was apprenticed to Mr. John Kemp at the above address, and ultimately succeeded him in the business, which he carried on under the style of Kemp & Elmitt. He passed the Qualifying examination in 1885. Mr. Elmitt was greatly interested in Masonic affairs, and was a P.M. of the Witham Lodge 297.

SIMNETT.—At Burton-on-Trent, on July 22, Thomas Simnett, chemist and druggist, aged seventy-two.

#### Personalities

Mr. Bannerman Sangster, son of Mr. Charles Sangster, chemist and druggist, Slough, has passed the final examination of the Institute of Chartered Accountants in England and Wales.

Mr. George Wilson, son of Mr. G. A. Wilson (Tozer, Kemsley & Millbourn, Ltd., export merchants, London, E.C.3), has obtained the M.B., Ch.B., degrees of Aberdeen University:

Mr. R. Campbell Feather, B.A., son of Mr. Arad Feather, a director of Meggeson & Co., Ltd., London, S.E.16, has obtained the B.Sc degree of the University of London in chemistry.

Among the South African chemists at present on a visit to this country are Messrs. K. A. E. Linley, Mowbray; W. A. Sleggs, Woodstock, and J. Walls, Somerset Strand, Cape Province.

Messrs. W. A. J. Cameron, P. J. Spruyt, and F. C. Willmot, chemists and druggists, have been appointed members of the South African Pharmacy Board for the period ending December 31, 1933.

CERTIFICATES OF NATURALISATION have been granted to P. J. Franklin, surgeon, 27 Wimpole Street, London, W.7; A. Gilberg, medical practitioner, Beaulieu House, Bottisham, Cambs.; A. Milligan, veterinary surgeon, 10 Castle Hill Avenue, Folkestone; J. A. Roelofsen, chemical works manager, "Hillcrest," Saltburn-by-the-Sea; C. C. Valli, managing director, 42 Crediton Hill, Kilburn, London; M. Lurie, medical practitioner, 347 Oneen's Road, Battersea, London Queen's Road, Battersea, London.

#### Wills

Mr. John Kinnis, of 26 Ivy Road, Gosforth, Northumberland, retired wholesale chemist, who died on May 24 last, aged 75 years, left estate of the gross value of £7,274 8s. 2d., with net personalty £6,538 3s. 5d.

MR. WILLIAM JOHN CAMPBELL, of 18 Goldhawk Road, Shepherd's Bush, W., chemist and druggist, who died on November 12, aged 64 years, left estate of the gross value of £2,639 8s. 4d., with net personalty £2,153 1s. 8d.

Mr. Ernest Edward Hall, of 6 Balfour Crescent, Wolverhampton, Staffs, chemist and druggist, 293 Tettenhall Road, who died on February 1, left estate of the gross value of £10,647 12s. 2d., with net personalty £7,717 9s. 4d.

MR. EDWARD EMMERTON, chemist and druggist, Shelley House, Freshwater, Isle of Wight, and formerly of 27 High Road, Balham, London, S.W., who died on June 1, left estate of the gross value of £2,845 19s. 7d., with net personalty £1,844 13s. 7d.

#### **Business Changes**

Mr. J. Whyte, chemist and druggist, has taken over the business of Mr. J. H. Fisher, Ph.C., High Street,

SPENCER BROTHERS, puff manufacturers, have removed from 17 Farringdon Avenue, London, E.C.4, to 39-40 Shoe Lane, Holborn Circus, E.C.4.

#### Information Department

#### INFORMATION WANTED

Postal or telephone information with respect to makers or first-hand suppliers of the undermentioned articles will be appreciated A/217. Elliott & Co. for leather mats.

B/237. Foam bath salts.

M/247. Gilbert's benzine paste.

M/257. Neuropyrol.

J/207. O. & S. for Damiana Mixture.

B/237. Tanner's food.

E/247. Vassadyne (veterinary)

B/237. Vicycate.

M/257. Neuropyrol.

#### Observations and Reflections By Xrayser III

#### Leeds Chemists

have discussed the question of the Pharmanave discussed the question of the Pharmaceutical Society recognising the training of apprentices in wholesale drug houses (U. & D., July 21, p. 64), and perusal of your report of the discussion confirms my impression that many chemists have been labouring under misapprehension on the subject of the length of the period of apprenticeship. As I pointed out crute recording the of apprenticeship. As I pointed out quite recently, the Society is only concerned about the time spent in acquiring a practical acquaintance with the dispensing and compounding of medicines. This must not be less, in the case of candidates for the qualification of chemist and case of candidates for the qualification of chemist and druggist, than 4,000 hours, which means that an apprentice doing nothing else but compound and dispense medicines would be kept occupied for something like forty hours a week during a period of two years. But it is also necessary that the apprentice should learn all about the conduct of the chemist's business, apart from the compounding and dispensing of medicines, and that ought to occupy another two years at least. There seems to be no particular reason why the training in compounding and dispensing should not be obtained in a wholesale house, but I fancy most of us will agree that those in charge of apprentices in wholesale houses cannot possibly teach what must be learned about the conduct of a retail business. If, therefore, apprentices in wholesale houses, after being trained as dispensers, wish to engage in retail business, it seems obvious that they must be further trained in shops, either as apprentices or improvers. But this does not concern the Pharmaceutical Society, with its present powers, and it is necessary to get rid of the idea that what the Society insists upon in the way of training and time spent in training is all that pharmaceutical apprenticeship must include. compounding and dispensing of medicines, and that ought

#### Until Recently,

chemists and druggists were, to put the matter bluntly, only qualified as fit and proper persons to sell and dispense certain poisons. This, of course, was required in the public interest, but no such anxiety regarding the public welfare was manifested in respect of the dispensing of medicines generally. The National Health Insurance Acts recognise us as the right and proper persons to dispense medicines, and the tightening up of apprenticeship requirements may well be a prelude to statutory recognition of chemists and druggists as the class of persons who alone are properly trained and equipped to dissons who alone are properly trained and equipped to dispense medicines in the ordinary course. Meanwhile, I am still wondering whether employers are always justified in signing up apprentices who are leaving them as having devoted 4,000 hours to the compounding and dispensing of medicines while in their employment. If the apprentices have been for the street of the apprentices in a so while here for the street of the ticeship as a whole has been for two years only, I should feel disposed to challenge the statement; if the entire period has been three years, I should not feel free from doubt. My reason for such scepticism is not based upon suspicion about the honesty of those who do the signing up, but upon uncertainty whether they understand what the requirements of the Pharmaceutical Society really are. It should now be clearly understood that the period of apprenticeship is entirely a matter of agreement between the parties to the contract, and that the Society only stipulates how 4,000 hours must be occupied during the period agreed upon.

#### **Troublesome Customers**

who happen to be insured persons wanting medicines or rebates on bottles cannot, apparently, be dealt with effectually except by the chemist who is annoyed or insulted by such persons putting himself to trouble which may lead to still further putting nimself to trouble which may lead to still further inconvenience. Some chemists are of opinion that the best possible way of dealing with abusive people who seek to take advantage of their position as insured persons is to refuse to serve them. If an insured person, in such circumstances, lodges a complaint with the Insurance Committee, the chemist will at least have an opportunity of stating his case and,

if that is presented properly, getting the trouble-some person reprimanded by someone in authority. Curiously enough, there appears to be no provision in the Regulations for medical benefit such as would enabled a chemist to lodge a complaint with any hope of getting it considered; so the next best plan is to compel the insured person to complain and then show him up.

#### Your Special Issue

is such a bountiful feast of good things that even my robust stomach for antiquarian fare finds it a matter of difficulty to assimilate a fraction of the provision. Dr. Singer's article on the Dawn of English Medicine is a further contribution to the many which It will, I imagine, be the means of introducing many of your readers to the compendious History of Medicine which has recently been written by him. Dr. Singer, who has an established reputation in this field of literature, is M.D. of Oxford, of which university the first English historian of medicine was also a graduate and at which he became Professor of Chemistry. This was John Freind, the bicentenary of whose death occurs this week; he died on July 26, 1728. His name is but rarely mentioned in connection with his writings on chemistry, but it is well known in association with his "History of Physic."

#### John Freind.

like his disciple of to-day, was a most distin-guished classical scholar; but quite early in his career he turned his attention to the study of physic. One of he turned his attention to the study of physic. One of his first papers treating of medical subjects gives a clue to his rational temperament, which fed his desire to see events in a "dry light." Benjamin Hutchinson says that in 1701 (he was then twenty-six years of age) he sent a letter to Sir Hans Sloane—"De Spasmi rarioris Historià"—"concerning some extraordinary cases of persons afflicted with convulsions in Oxfordshire, which, at that time, made a very great noise, and might probably have been magnified into something supernatural, if our author had not taken great pains to set them in a true light." In 1704 he was appointed Pro-fessor of Chemistry at Oxford, as already stated, and became an exponent of this branch of science in accordance with the mechanical doctrines then in vogue. His ance with the mechanical doctrines then in vogue. His writings on medical subjects were also based upon what he considered to be principles derived from the mathematical discoveries of Sir Isaac Newton. 'Freind's chemical lectures—" Prælectiones Chymicæ'"—were published in 1709, and the English translation of them in 1712. His views were not acceptable to the editors of the "Acta Eruditorum," who looked upon the Newtonian philosophy as being not only in the nature of fiction, but as having a reactionary tendency. In all ages there as having a reactionary tendency. In all ages there prevails vis inertiae,

#### The Fame

of John Freind is for ever firmly fixed on "The History of Physick from the Time of Galen to the beginning of the Sixteenth Century. Chiefly with Regard to Practice. In a discourse written to Doctor Mead." Of this the first part appeared in 1725 and the second part in the following year. I think it unlikely that any book of equal importance was ever introduced to the public in so casual a manner or written and arranged in so remarkable a way as this one. The notice to the reader occupies about thirty lines, of which the last eight alone are significant. He thought if those who were "versed in the Antients found it useful or entertaining," this labour had been year well employed and it is a labour had been year well employed. labour had been very well employed, and, if it should not be so, then "I shall not at all be dissatisfied with having amused myself in this Way." There are 700 pages in the two volumes, and the narrative runs through them continuously without any division into sections or chapters. But it is a most interesting discourse; so much so that I have small wonder that Freind felt content to leave it to his readers without any corrections. tent to leave it to his readers without any commendation. He must have been a man of a choice spirit. It is written of him that he was "a deep philosopher, a learned physician, an elegant writer, and an ornament to society; as being very honest and humane, ever desirous of doing good, and of communicating knowledge to the utmost extent of his power."



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# Editorial Articles

The Conference Papers
The reduction in the number of this year's British Phar-

maceutical Conference papers from the customary twentytwo or twenty-three to sixteen has given more time for the adequate discussion by the members present at the meeting of the points of interest that they raise. As a whole, they are not unworthy successors of the hundreds that have preceded them; and judging by the keenness with which they were discussed at the first Science Session of the Conference, they bid fair to leave a lasting impression of useful research constituting a serious contribution to scientific literature. For the convenience of our readers we give a brief indication of the subjectmatter of the papers as an introduction to the abstracts which appear in our report of the Conference proceedings on other pages of this issue. The Purity of Ether for Analytical Purposes is the subject of a series of experiments by Mr. G. Middleton. Attention is drawn to several cases of misleading results obtained by using deteriorated ether as a solvent, and the high reactivity of such ether is shown by experiments dealing with oleic acid and the alkaloids of aconite, hydrastis and ipecacuanha. Assay of Belladonna Leaves and Extract of Belladonna is a communication from Messrs. Charles M. Caines and Norman Evers. Of five methods used in the assay, the most satisfactory for leaves is a modification of the B.P. method, and for extract the U.S.P. method. A New Test for the Activity of Medicinal Charcoal has been elaborated by Mr. Harry Brindle to compare the relative activity of charcoals; it depends on the property which active charcoal possesses of adsorbing vapours of volatile liquids. The test can be conducted with a minimum of trouble, and is claimed to give trustworthy results. A Comparison of the Adsorption Powers of Medicinal Charcoals has been determined and compared by Mr. Harry Brindle in eighteen cases; the conclusion drawn is that pulv. carbo. lig. as ordinarily dispensed for medicinal purposes is inactive. The author suggests improvements in the manufacture and the adoption in the B.P. of tests for activity. Mr. T. Tusting Cocking gives the results of several years' routine work and investigation in a paper on Compound Tincture of Benzoin. Cocking finds differences between analytical figures for samples of the tincture and figures calculated from the data of the constituent drugs, especially the ratio between the acid and ester values. He views with suspicion any compound tincture of benzoin containing over 20 per cent of total solids. Mr. J. H. Franklin contributes a prac tical paper on the composition of Mercury Ointment, arriving at the conclusion that the best basis is one consisting of hydrous lanolin, y low beeswax and benzoated lard. Iron and Ammonium Citrate of Commerce forms the subject of a paper by Mr. G. J. W. Ferrey, who has examined the composition of a representative number of samples and studied their behaviour in certain solutions commonly met with in prescriptions. The author recommends that the Pharmacopæia process of assay should include washing and reignition of the ash with limits of from 30 to 32 per cent. The Testing of Barium Sulphate for X-Ray Purposes is dealt with by Mr. T. Tusting

Cocking, who puts forward the B.D.H. tests as tentative standards. A close study of the literature has been made and critical observations recorded. The Determination of Iodine in Organic Combination, Especially in Thyroid Gland, is a review of several methods by Mr. Wilfred Smith, who discusses and criticises these. For accuracy and rapidity the author recommends Hunter's original method for preparations where the iodine content is high, and a modification of Kendall's method if the iodine content is less than 0.2 per cent. The Use of Iron Reagents in the Detection and Differentiation of Phenols is a comprehensive paper on the use of iron reagents, particularly Mitchell's ferrous tartrate reagent. author, Mr. A. H. Ware, suggests a division of the whole group of phenols into three classes. The variations of colour dependent on hydrogen-ion concentration is noted. The Melting Point of Cocaine Hydrochloride has been studied by Mr. Wilfred Smith. It is shown that the melting point of the salt given in pharmacopæias is too low for the salt as prepared at the present time, and conditions for the determination of the melting point are suggested. The liquid green Apiol met with in commerce does not agree with the description given in the monograph in the British Pharmaceutical Codex. Mr. J. R. Walmsley has gone into the question of the inaccuracies arising out of this and the other designations in use. The paper on Infusion of Senega, by Mr. J. F. Liverseege, should interest manufacturers and dispensers, as the paper revolves round the question of the concentrated versus fresh preparation, with suggestions for alterations in the nomenclature. Malt Extract and Oil Emulsions are dealt with in three papers on work carried out in the laboratory of Allen & Hanburys, Ltd. Mr. J. M. Jones is responsible for the second paper in its entirety, and is associated with Mr. T. McLachlan in the first, and with Mr. N. Evers in the third. Twelve samples of commercial "malt and oil" were examined in the first series of experiments, and the composition determined. The second objective was the vitamin-A content of these samples, and finally the methods of testing were scrutinised. It has been established that calcium chloride, used for drying solutions of oils being tested for vitamin A, should be avoided, as it accelerates the deterioration of the vitamin. We must not omit, in this connection, mention of the chairman's address (pp. 100-104), which had for its title Recent Biochemicol Discoveries in Relation to Pharmacy, and formed a valuable conspectus of the present position of biochemistry. These papers, and the discussions to which they gave rise, we commend to the careful perusal of pharmacists and others interested.

#### Cheaper Mercury

The fact cannot be denied that the trade demand for mercury has been extremely poor during the past fortnight or so, and this, combined with considerably cheaper c.i.f. offers for shipment from Italy, down to £20 7s. 6d. per bottle net, tended to make for more active competition by spot holders. Some little time ago there was a vague indication of temporary resistance to the inherent weakness of the market in connection with covering inquiries by a few dealers or importers who were rather short on their current contracts with consumers. In the past week, however, the downward movement has been accelerated, and the fact has to be noted that since dealing with the position on May 19 last (C. & D., pp. 629-630), the market has depreciated by well over £2 per bottle, thus amply justifying the forecast then made. In view of the arbitrary attitude of the Italo-Spanish Cartel in persistently retaining the market at a highly inflated level, and the reports which have been circulated as to their intention to curtail operations so as to guard against further accumulations, it is perhaps wise to bear in mind that strenuous efforts are undoubtedly being made to maintain prices as much as possible, notwithstanding the seriously attenuated legitimate demand. The view, as a matter

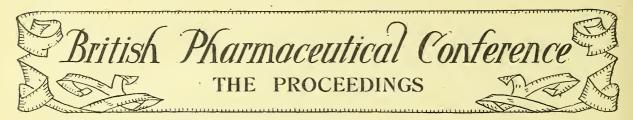
of fact, has been expressed by a certain Continental trade authority closely conversant with the situation, that there is not much possibility of a break-up of the Italo-Spanish monopoly; in fact, it is said that there is to be a considerable tightening up of the convention. For one thing its existence means that the absorbing capacity of the world's markets will remain more or less under restraint, chiefly due to the reluctance of importers to carry stocks in excess of actual requirements. The result is that there has been clear evidence of shrinking imports by all the more important consuming countries, which speaks for itself, and, so far as London is concerned, there is certainly no large amount of stock weighing on the market as might be gathered from a close analysis of incoming supplies, making due allowance for estimated needs and actual re-exports for the first half of this year. The returns work out as follows:—

	1926	1927	1928
	1.098	2,149	1,346
	7,264	12,776	8,986
U.K. re-exports, June	350	43	822
U.K. re-exports, JanJune	1,480	379	2,651
U.K. net imports	5,784	12,397	6,335

There is no doubt that whatever was the size of the large stocks carried over at this end from the previous year, these must have declined considerably since, seeing that our net imports for the six months at 6,335 bottles were but little over one-half of the figures shown for January-June last year. That London is persistently threatened with a shortage, is a conclusion which becomes the more emphasised by the fact that imports this year included two consignments representing about 4,500 bottles which went direct into consumers' hands, and were therefore not available for sale through the merchant trade. This was part of a special order for 10,000 bottles placed last winter, as referred to previously in our columns; and it is believed that the next consignment towards this will be shipped by about October next. Home stocks are, at all events, comparatively small, albeit consumers have been buying strictly from hand-to-mouth for months past, and consequently hold but little stock. Under the controlling forces at work between Spain and Italy, attempts were made to stabilise the price on the London equivalent of about £22 10s. per bottle, but the handicap to the outlet has become clearly apparent. The Italian exports are significant in this respect, details for the last three years being as follows:—

, acture 202 0 0				
Quintals		1925	1926	1927
To Austria		298	81	65
France	***	961	1,042	851
Germany		3,003	4,069	2,874
Great Britain		2,086	1,718	1,674
Japan		1,511	2,599	1,421
Hongkong	• • •	1,297	1,188	759
British India	***	960	1,087	599
United States		3,557	4,464	3,020
Other Countries	***	1,401	1,837	2,209
. m . r		15.074	10.005	17 470
Totals		15,074	18,085	13,472

These figures indicate a decrease for every country specified, which has been particularly marked in the case of the chief importing countries, such as the United States, Germany, Great Britain and Japan, although there was some increase for "other countries." The total amounted to 13,472 quintals, which is considerably under that for 1925, while compared with 1926, there was a set-back of no less than 4,613 quintals, representing over 12,000 bottles. It is suggested that the Ras-El-Ma mines in North Africa are capable of being made to yield good quantities, but there is just a possibility of these mines being eventually secured by the Italo-Spanish Combine, so that their control of the world production would be to that extent strengthened. The Cartel may well have ample financing facilities at their disposal, and thus be in a position to avoid forcing surplus stocks on the market by curtailing operations, but the financing of big accumulations may not eventually be found an easy matter. The market, all the same, is distrusted, and its steady downward trend of late has been the inevitable outcome of lack of demand.



The superb morning which greeted the opening of the Conference perfected the view down the Promenade from the hotel selected as the headquarters, a view quite familiar to readers of The Chemist & Druggist Special Issue of June 30. A few minutes after ten o'clock one of the smaller apartments in the Town Hall was filled with an audience of average size—the official estimate was 350—and the chairman's procession entered by an-

other door and ascended the platform. The chair-man (Mr. R. R. Bennett) was supported by Mr.
Herbert Skinner (president of the Pharmaceutical Society of Great Britain), Mr. F. J. Fitzpatrick (president of the Pharmaceutical Society of Ivaland). Mr. A. C. McBride (president of the Pharmaceutical Society of Northern Ireland), Alderman James Stewart (who was deputising for the Mayor of Cheltenham), Mr. William Kirkby and Mr. C. A. Hill (pastpresidents of the Conference), Mr. F. W. Gamble and Mr. D. Lloyd Howard (past-chairmen of Howard (past-chairmen of the Conference), Mr. Richard Bremridge and his successor, Mr. H. N. Linstead (secretary of the Pharmaceutical Society of Great Britain), Mr. T. Great Britain), Mr. Guthrie (treasurer of the Society), Mr. Philip F. Rowsell (the "father" of the Society's Council),
Dr. F. W. Crossley Holland (treasurer of the
Conference), Dr. C. H.
Hampshire (secretary of the Conference), and Mr. H. Burton Clark (chairman of the Local Executive Committee). Alder-

man Stewart wore his eighty years very lightly as he delivered the official welcome of the borough in clear and easily heard tones. Ripples of laughter accompanied his references to a local "paradise," the claims of which to that exalted title he demonstrated with the precision of a syllogism. The president of the Pharmaceutical Society, in thanking Alderman Stewart on behalf of the Conference, wittily remarked that he now had great hopes of getting to Paradise. Apologies for absence were intimated by the chairman, who proceeded to read his address (printed in full on pp. 100-104 of this issue), an interesting résumé of present knowledge in the wide field of biochemistry. Mr. Bennett's great personal popularity rendered the enthusiastic reception of his address, which occupied forty-five minutes in its delivery, a foregone conclusion. More than one member of the audience regretted that it was not printed in the official "red book" which contains the text of the science papers. The volume referred to marks, this year, a break with the past, in that it has been changed

from quarto to octavo size, and has been printed in the larger type of the "Quarterly Journal of Pharmacy"—a gain in convenience in both respects. Mr. Kirkby's graceful reference, in seconding the vote of thanks for the address, to his reciprocal relations with the chairman, took one's mind back to the year 1919, when Mr. Kirkby was president and Mr. Bennett a secretary of the Conference. Mr. Bennett accomplished the con-

siderable feat of imparting freshness to the time-honoured announcement that the ladies might depart before the reading of the science papers commenced, and that the male portion of the audience was expected to devote itself to the serious side of the Conference. Everything was proceeding happily when the last section of our report left, and the general impression was that of one large family party.

Opening Session

The Mayor of Cheltenham (Alderman C. H. Margrett) was unable to be present in the Town Hall to offer the official welcome to the Conference, and this was extended by Alderman Stewart. Mr. R. R. Bennett (chairman of the Conference) presided.

Conference) presided.

The CHAIRMAN, at the outset, said he was delighted to see such a good gathering at the opening session after the splendid entertainment which they had all enjoyed on the previous night. Introducing Alderman Stewart, who was deputising for the

Mayor, he explained that the latter was unfortunately unable to be present that morning. They had all read the words of welcome to the Conference in the beautiful souvenir with which they had been presented, and they were now to receive from Alderman Stewart the official welcome to the charming town of Cheltenham.

Alderman Stewart, in giving the Conference a hearty welcome, said: We all very much regret the absence of

Alderman Stewart, in giving the Conference a hearty welcome, said: We all very much regret the absence of our Mayor, but I think most of you know the reason why he is not here. He took a cruise in the Mediterranean and was returning when the boat in which he was a passenger ran into a fog. In consequence of that it got rammed by another vessel, and had to put into Lisbon, and, to make matters worse, at Lisbon there was a Portuguese revolution in progress so that he got from one fog into another. (Laughter.) But I am very pleased to tell you that our Mayor returned safely this morning at one o'clock. I am afraid we shall not have him here this morning, but possibly he may come to



THE MAYOR OF CHELTENHAM
(ALDERMAN C. H. MARGRETT, C.B.E., J.P.)

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the dinner this evening—(applause). Well, now, I am sure we give you a very hearty welcome to Cheltenham. I am not going to speak of its beauties. I shall leave that until you have completed the tours round about this district. But there are one or two places I should like you to visit, and more especially my pet Paradise, Sandford Park. You enter from the Bath Road, and there you have a nice Dutch garden, with a water lily pond, little jets of water. Further on you have nice cascades, rippling streams going over the rocks, and further on still a beautiful fountain playing all the time, and then the children's playground. I may say it has got two gates on the north, two on the west, two on the east, and two on the south, so it is a perfect little Paradise on the horth, two on the south, so it is a perfect little Paradise—(laughter). Sandford Park is close by, so none of you must miss it before you go home.

Another place I would like to refer to is Tewkesbury. There we have a waterworks to supply this borough and neighbourhood. We take 2,000,000 gallons of water from the Severn daily, and filter it and pump it into Cheltenham, and supply the villages by the way. I can therefore assure you that there is not much chance of you experiencing a famine even if we don't get any rain. Then I should like you to take some of our mineral waters— (laughter). They are most excellent. They most excellent. They have made Cheltenham what it is to-day, and I am inclined to think there would be very little use for chemists if everybody took the Cheltenham waters. Then you should visit our baths, which are quite up to date, and include a paraffin-wax bath, ultra-violet rays and other adjuncts. We have also two very nice farms in the neighbourhood which we use for sewage disposal, and there is a perpetual motion of the rotary apparatus which purifies the surface of the water

the surface of the water so that trout can live in it. I hope that this sixty-fifth anniversary of your Conference will be one of the best that you have ever had. I can assure you that the Local Committee and the Town will do their that the make you spend a very happy week in Cheltenbest to make you spend a very happy week in Cheltenham-(applause).

The CHAIRMAN said the Conference considered it a very great compliment that Alderman Stewart was present that morning. "We have all enjoyed your address exceedingly," he said, adding that the Conference had not met in Cheltenham before, and he was happy indeed that it was his good fortune to occupy the chair on that occasion.

The President of the Pharmaceutical Society (Mr. Herbert Skinner) proposed a vote of thanks to Alderman Stewart. He-said: "It is with very great pleasure I rise to propose a vote of thanks. Unfortunately the Mayor is not with us, but we all hope we shall see him to-night. But I do know, sir, that the reception you gave us last night, the hearty welcome you gave

us then, and your presence here this morning are all indications of the good feeling your Council has of pharmacy in general. I can understand from your being a health centre that you are interested in pharmacy throughout. Whether it would happen if every one of us lived on Cheltenham waters that we should one of us fived on Cheltenham waters that we should not require pharmacy I cannot say—(laughter). Probably there would be nothing of us left—(laughter). However, I am very pleased the Mayor was able to get out of his difficulties. In London we know what fogs are, and we are guilty of many fogs—(laughter)—and I am glad he was able to get out of the fogs in the Mediterranean and come here to the wonderful sunthe Mediterranean and come here to the wonderful surshine. From the description you have given of the Paradise at the back here I can see that some day I shall get to Paradise—(laughter)—and from your description I am sure we are going to enjoy ourselves this week. We started last night, and I am pleased

to say you have some wonderful water, though it has no medicament in it. I propose a very hearty vote of thanks to you, Alderman Stewart, and the Borough Council of Cheltenham for the splendid reception you have given to this Conference. (Applause.)
The CHAIRMAN said he

thought it was not an occasion for a formal resolution, and he would not ask for a show of hands, but simply call on the Conference to show by acclamation how heartily they appreciated Alderman Stewart's welcome.

The vote was accorded

with enthusiasm.
STEWART briefly acknowledged the compliment.

APOLOGIES FOR ABSENCE.

The CHAIRMAN then announced the receipt of a number of messages of regret from old friends unable to attend the Conference. There were letters from Mr. F. Ransom, Mr. W. A. H. Naylor, Mr. E. White, and Dr. David Hooper,

in Sydney, Australia, who sent best wishes for the success of the meeting. Then there was a message from Mr. Titterington, who was in Cairo, and who, it would be remembered, was private chemist to the King of Experience. remembered, was private chemist to the King of Egypt. He was sure all those he had mentioned were with the Conference in spirit though not in body, and their absence would be regretted. (Applause.)



MR. HERBERT SKINNER, PH.C., President of the Pharmaceutical Society

#### CHAIRMAN'S ADDRESS

The chairman next delivered his address, which is printed in full on pp. 100-104 of this issue.

#### VOTE OF THANKS

Mr. D. LLOYD HOWARD proposed a vote of thanks to the chairman. If he might use an American phrase, he would say that the chairman had sure delivered the goods. He was certain, without attempting to criticise or appreciate the address, that it was one that would be read and re-read with great benefit by many who

felt a great interest in the important subjects with which it dealt, but had not the opportunity to make that extensive research into the large literature which the chairman must have consulted before making his address.

Mr. William Kirkby seconded. He said he did so

the more heartily for personal reasons. The chairman and he enjoyed reciprocal relations in regard to writing and reading presidential addresses, and he had now an opportunity of thanking Mr. Bennett for many kindnesses. They had had such a feast of cooked and uncooked viands that they would perhaps only be able

"We stand on the edge of a great world in so far as it refers to our origin and our future," he said. "Biochemistry holds within its heart secrets which we are only just beginning to unravel. As an old man I am heartened and encouraged at the discoveries made from time to time concerning not only our origin but also our destiny. I read lately in one of the newspapers that are publishing articles on the subject of whence we came that anthropoid apes are responsible for our long faces and our swelled heads. A very famous our long faces and our swelled heads. A very famous man had the courage to say, many years ago, that he was on the side of the angels. As I look on our chairman I see nothing of the long face, of the swelled head. (Laughter.) But, however that may be, we are looking forward to the future, and our chairman has shown us what pharmacists can do in the direction of unfolding secrets which nature has for us. Mr. Bennett has from day to day kept his hand on these things which are coming, and he comes here and summarises them for our edification, and, I hope, also for our happiness." (Applause.)

The CHAIRMAN, returning thanks, expressed appreciation of the way in which his address had been received, and of the more than generous remarks made by the proposer and seconder. If he had succeeded in putting on record something which was of interest to the members of the Conference, he felt very amply repaid.

(Applause.)
The ladies left at this stage, and the reading of science papers was commenced.

#### Science Section-Tuesday Morning

The first paper presented was :-

#### The Purity of Ether for Analytical Purposes By G. MIDDLETON

[ABSTRACT]

Much attention has been given in recent years to the purity of anæsthetic ether, and stringent tests have been devised and employed for the detection of minute traces of decomposition products in it, but the interest has not extended beyond medical and pharmaceutical circles. From the analytical standpoint, ether is commonly regarded as an innocuous solvent, of which the purity and suitability for general purposes is taken for granted; for this reason it seems desirable to draw the attention of analysts to the fact that ether is a comparatively unstable compound, and that only by careful testing at intervals which are not too prolonged can its freedom from undesirable impurities be assured. Even if the ether is initially pure, it is impossible to guarantee its state after storage for some months, unless it has been kept under conditions which preclude the access of air and light. Cases are on record where it has been found that a particular reaction could be obtained only when pure ether was used—others where the presence of impurity was necessary for the reaction to occur. Experiments described show that, by the use of impure ether for extraction of a substance, with subsequent evapora-tion of the solution, both the weight of the residue and its nature may be changed by chemical reaction due to

impurities present in the ether.

Commercial ether may contain as impurities water, ethyl alcohol, methyl alcohol, fusel oil, methyl ethyl ether,

vinyl ethyl ether, acetic acid, acetaldehyde, acetal, hydrogen peroxide, and an organic peroxide which is hydrogen peroxide, and an organic peroxide which is probably either dihydroxy-diethyl peroxide or ethoxyethyl hydrogen peroxide. (It is convenient to refer to this as "ether peroxide.") In addition to the fact that several of these are commonly present in commercial 0.720 methylated ether, acetaldehyde and the organic peroxide are formed on storage under unfavourable conditions, more specially if the other is initially impured. From the especially if the ether is initially impure. For the majority of laboratory purposes the peroxide is the impurity most to be guarded against, both on account of the liability to its formation during storage and of its powerful oxidising action, which is in general considerably greater than that of hydrogen peroxide. The author gives three examples of colour reactions.

When discussing the possibility of explosion during the

When discussing the possibility of explosion during the drying of ether extracts it was stated that ether peroxide accumulates in such residues, and in the presence of readily oxidisable compounds such as unsaturated fatty acids a chemical action may be anticipated. Experiments illustrate the manner in which this fact may influence analytical results. A small quantity of oleic acid was weighed, dissolved in 50 c.c. of ether, evaporated to dryness on the water bath, and the residue dried at 85°-90° C. The experiment was performed in parallel using the The experiment was performed in parallel using the purest ether commercially available (free from peroxide), and also ordinary ether which had been kept in a partially filled bottle exposed to a moderately strong light for one month, and which contained peroxide equivalent to 0.01 per cent. of available oxygen. The residue was weighed at intervals, and finally the iodine value was determined.

Experiment 1

		Initial weight	Weight after drying 10 minutes	Weight after drying 1 hour	Weight after drying 1½ hours	Iodine value of res'due
A. Pure ether	Weight of oleic acid  Per cent. of original weight	0.527	0.522 99.1	0.522 99.1	0.522 99.1	89.5
B. Impure ether	Weight of oleic acid  Per cent. of original weight	0.531	0.608	0.544	0.538	76.9

Experiment 2

Disperential L						
		Initial weight	Weight after drying 10 minutes	Weight after drying ½ hour	Weight after drying 2 hours	Iodine value of residue
A. Pure ether	Weight of oleic acid  Per cent. of original	0.307	0.307	0,305		88.6
	weight	100.0	100.0	99.4	-	
B. Pure ether	Weight of oleic acid	0.322	0.322	0.322		88.8
	Per cent. of original weight	100.0	100.0	100.0		
C. Impure ether	Weight of oleic acid  Per cent.	0.315	0.465	0.422	0.372	45.1
	of original weight	100.0	147.6	134.0	118.3	
D. Impure	Weight of oleic acid	0.323	0.466	0.414	0.365	55.6
	Per cent. of original weight	100,0	142.4	128.2	113.0	

In the first series of experiments wide-mouthed flasks were used, allowing more free evaporation than

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the small conical flasks used in the second series. The results show that with pure ether the weight is constant after drying for ten minutes, but with impure ether more than two hours is required, no true constancy of weight being attained during the period of the experiment. This prolonged period of heating is in itself objectionable, as many unsaturated fatty acids show a distinct drop in iodine value on heating in air. Further, it may be seen that the fatty acid recovered from the impure ether has undergone a marked drop in iodine value in the first experiment, while in the second the figures obtained for the iodine value of the residue from impure ether after drying for two hours are grossly inaccurate, being much below those for the unchanged acid. Whether the great reduction in iodine value in this case is due entirely to oxidation of the oil, or, as is probable, in part to a little ether peroxide remaining in the residue, is not significant for the present purpose.

Although alkaloids are more frequently extracted with chloroform than with ether, there are cases where the latter must be used. The effect of impure ether on the estimation of the alkaloids of aconite, hydrastis and ipecacuanha is shown by the results given below, two different samples of impure ether being used.

Aconite.—The alkaloids were extracted from aconite liniment by the Chappel and Allport modification of the B.P. process, dried in vacuo, and dissolved in pure ether. Of this solution two portions of exactly 25 c.c. were diluted with 80 c.c. of pure and impure ether respectively, evaporated and dried at 60° C. The residue was titrated using hæmatoxylin as indicator.

Expt. No.	- <b>-</b>	Weight after drying 15 min.	Weight after drying 1 hour	$\begin{array}{cc} {\rm Titration} \\ N/{\rm 20} & {\rm H_2SO_4} \end{array}$
1	Pure ether	0.153 0.174	0.152 0.161	5.0 c.c. 3.5 c.c.
2	Pure ether	0.139 0.198	0.139 0.158	4.63 c.c. about 1 c.c. (end point very inde- finite)

Hydrastis.—The alkaloids were obtained in ether solution from the liquid extract by the B.P. process, using pure ether. To two portions of 20 c.c. each of the ethereal solution were added 70 c.c. of pure and impure ether respectively, the mixtures evaporated on the water bath and dried at 85°-90° C.

	xpt.	-	Wt. after drying 10 min.	Wt. after drying 1 hour	Wt. after drying 2½ hours	Colour of residue	Solubility in dilute sulphuric acid
1	••	Pure ether	0.119	0.115	0.115	Pale yellow	Com- plete
		Impure ether (0.005 per cent. available oxygen)	0.130	0.123	0.122	Brown	Almost insoluble
2	••	Pure ether	0.119	0.117	0.121	Pale yellow	Com- plete
		Impure ether (0.01 per cent. available oxygen)	0.42	0.130	0.131	Dark brown	Almost insoluble

Ipecacuanha.—The total alkaloids were separated from the liquid extract by the B.P. method, using pure ether, and dissolved in chloroform. To two portions of exactly 5 c.c. of the chloroform solution, 25 c.c. of pure and impure ether respectively were added, the solutions were evaporated and dried at 80°-85° C. (See table in next column.)

The examples given to illustrate the effect of the use of impure ether were chosen as representative of common laboratory operations embodying the use of ether, and it is interesting to note that in every one of these cases a marked effect was observed. The result of using impure

Expt. No.	Wt. after drying 1 hour		Wt. after drying 2 hours	Appearance of residue
1	Pure ether	0.113 0.125	0.111	Clear Clear
2	Pure ether Impure ether (0.01 per cent. available oxygen)	0.149	0.152 0.168	Clear Turbid

ether was apparent in two directions—the residue attained constant weight very slowly, the final weight being generally higher than that obtained using pure ether; the residue was chemically altered as shown by a difference in appearance, solubility, iodine value and titration. Even the worse of the two samples of deteriorated ether was up to the Pharmacopœia standard when tested only one month previously, and while admittedly this was a bad sample, yet a smaller deviation in analytical results than that shown would lead to serious error. Though peroxide is the most reactive impurity to be found in ether, other substances may sometimes have a disturbing action. Thus ether containing peroxide, aldehyde, or an appreciable quantity of alcohol, leaves on evaporation with caustic soda a brown residue of aldehyde resin. Many samples of otherwise apparently pure ether have quite a considerable bromine absorption figure. In order to make the results as striking as possible, the conditions in the experiments described in this paper were chosen so as to be favourable for the demonstration of the point at issue. It is not possible to say at exactly what point the analytical error produced by using impure ether becomes negligible, and safety can only be ensured by using always pure and undeteriorated ether. The author records his thanks to the directors of The British Drug Houses, Ltd., for permission to publish the paper.

#### DISCUSSION

The Chairman referred to the contribution from an analytical standpoint, and stated that not enough importance was attached to the fact that ether was comparatively an unstable substance. Even if ether was initially pure, it might rapidly deteriorate.

Mr. D. LLOYD HOWARD said the paper had a two-fold value, direct and pharmaceutical. For analysts it would avoid certain difficulties with regard to explosions which might have a serious effect. From a pharmaceutical point of view, it showed that everyone who handled ether, retailer, wholesaler or anæsthetist, ought to know that ether was a delicate substance.

Mr. Corfield stated that analysts, in particular, were careful and exact. He had no record of explosions of fatty residues having taken place with the use of ether as a solvent. Ethyl alcohol, methyl alcohol and water were stated to be impurities in ether, but it was hardly fair to regard them as impurities. They were characteristic of the preparation. Acetic acid was a strange substance as an impurity, and sulphuric acid in ether resulted probably as the result of oxidation of sulphur dioxide. The tables given by the author compared the results of pure ether and impure ether. He wished to know what was used as pure ether and what was impure ether. Analysts frequently renewed their stocks, and so undue decomposition was prevented. He would like to know the time during which this objectionable peroxide developed.

Mr. Deane mentioned discrepancies of analytical results, and referred to experiments on hydrastis.

Mr. J. RUTHERFORD HILL said that the paper was of practical interest, and he thought that much of the literature of analytical research would require revision. In biochemistry results might be affected if pure ether had been used. Regarding solubilities in ether, discrepancies were probably due to new points brought out in the communication. He referred to the work of Dr. Tait on the solubility of citric acid and tartaric acid in ether and the discrepancy in the results. The present communication threw new light on the discrepancy in

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that work. It emphasised the importance of using pure ether, and had a practical application. Analytical results

would need revision.

Mr. D. B. Dott suggested that the importance of impurities in ether from a therapeutic point of view had been exaggerated. The only deleterious substance of importance was aldehyde. Using impure ether for the extraction of alkaloids there was a tendency for them to become coloured. Carbon tetrachloride was preferable as a solvent.

Mr. EVERS said that in the extraction of oils containing vitamin A he used petroleum ether øwing to the danger of oxidation. He would like to know the effect of oxides in ether on the colour test for vitamin A and

the effect of using recovered ether. Did recovery of ether tend to concentrate the peroxide or vice-versa?

Mr. CARR, in reply to questions, said that all the points raised were met in the actual paper. He had omitted to state that in these experiments the quantitative results were obtained by using a very impure ether—ether through which air had been bubbled—and what was true in an exaggerated case of inferiority was true for impurity to a lesser degree. Water might not ordinarily be regarded as an impurity, but there were extreme cases in which ether was saturated with water. As to the purity of the ether used, 0.720 ether was used throughout, which was diethyl oxide. Diethyl ether was used as pure ether, and the impure ether was the same ether oxidised. Time was an important factor in the development of impurities. The presence in the 0.720 ether of aldehyde or peroxide accelerated oxidation. Oxidation seemed to be the result of catalytic action. A freshly redistilled ether was perfectly safe. The peroxide was removed, but it might contain aldehyde, Freshly recovered ether was likely to be superior rather than inferior to ether which had been left in a bottle. Ketones were physiologically harmful, but the only deleterious constituent was acetaldehyde, which was the primal substance from which oxidation took place. If ether was used as a test for vitamin A, it was very important to have the ether quite free from aldehyde or peroxide.

The only other paper taken at this session was :-

#### The Assay of Belladonna Leaves and Extract of Belladonna

By Charles M. Caines and Norman Evers [Abstract]

The present paper is a report on some work carried out at the request of the Science Committee of the Phar-maceutical Society on behalf of the International Pharmaceutical Federation. Certain definite methods were laid down for investigation, and the conditions formulated were strictly adhered to. Four samples were received, labelled —Pulv. fol. belladonnæ A, pulv. fol. belladonnæ C, ext. belladonnæ A, ext. belladonnæ B.

#### Belladonna Leaves

The methods carried out on the leaves were those of:—
(1) The B.P.; (2) Deutsches Arzneibuch ("German Pharmacopœia"), VI; (3) Eder; (4) U.S.P. X; (5) Van Itallie. The details of the two non-official methods are

as follows :-

as follows:—
Eder's Process.—To 7.5 gm. of powdered belladonna leaves add 57.5 gm. of alcohol (70 per cent.). After an hour, the liquid is filtered through a small filter of 10-cm. diameter. 40 gm. of the filtered liquid (corresponding to 5 gm. of the drug) is concentrated in an Erlenmeyer flask of 100-c.c. capacity, to a weight of 8 gm., 8 drops of dilute hydrochloric acid (2N) are added, and the weight adjusted with distilled water to 10.25 gm. Filter through a filter paper of 6-cm. diameter. To 8 gm. of the filtered liquid (corresponding to 4 gm. of the drug), contained in a 100-c.c. flask, add 50 gm. of ether and 2 gm. of dilute ammonia (2N), and shake. After five minutes filter through a cotton-wool plug 40 gm. of the ethereal solution (corresponding to 3.2 gm. of the drug) into a 100-c.c. Erlenmeyer flask. Evaporate

the ether, add two further quantities of 5 c.c. of ether,

the ether, add two further quantities of 5 c.c. of ether, evaporating each time completely. Dissolve the residue in 3 c.c. of alcohol (95 per cent.), add 15 c.c. of distilled water, and three drops of methyl red solution. Titrate the alkaloids with decinormal hydrochloric acid, using a micro-burette divided in 1/20th c.c. 1 c.c. N/10 HCl = 28.9 mgm. alkaloids. This represents the titre of the alkaloids from 3.2 gm. of the drug.

Van Itallie's Process.—15 gm. of belladonna leaves in fine powder is shaken with 95 gm. of alcohol (70 per cent.), and filtered through a dry filter paper of 15-cm. diameter. 50 gm. of the filtrate (corresponding to 7.5 gm. of the powdered leaves) is evaporated on a water-bath to 10 gm., and 10 drops of diluted sulphuric acid and sufficient distilled water to 15.2 gm. are added. 12 gm. of the filtrate (= 6 gm. of the powdered leaves) are filtered through a filter paper of 7-cm. diameter and shaken with 60 c.c. of ether and 4 c.c. ammonia, 5 gm. of powdered gum tragacanth added and again shaken, and the ether distilled from 50 c.c. of the clear liquid (= 5 gm. of powdered leaves). The residue is dissolved in 3 c.c. of ether, the ether evaporated, the residue dissolved in 5 c.c. of alcohol (95 per cent.), and diluted with 5 c.c. of distilled water, 2 drops of methyl red solution added, and the mixture titrated with N/10 acid until the liquid assumes a rose colouration; 5.2-8.6 c.c. are required. 1 c.c. of N/10 acid corresponds to acid until the liquid assumes a rose colouration; 5.2-8.6 c.c. are required. 1 c.c. of N/10 acid corresponds to 28.9 mgm. of alkaloids. The quantity of leaves was insufficient for further determinations.

The B.P. and U.S.P. methods gave the most consistent and satisfactory results. Since these methods depend on the complete extraction of the alkaloids by successive portions of solvent, it is assumed that the results obtained represent closely the amounts of alkaloid contained in the leaves. The average of the results obtained by the B.P. and U.S.P. methods is A 0.38 per cent. and C 0.49

per cent.

The U.S.P. Process.—The disadvantage of the U.S.P. method is emulsification caused by using chloroform

1 vol. to ether 3 vols.

The D.A.B. VI Process.—The results were very erratic.
Undoubtedly the cause of the results is the presence of ammonia in the ether when extracted with standard acid. We do not find the use of tale for clarifying the ethereal solution very satisfactory, and the taking of an aliquot portion of a volatile solvent such as ether appears to us to be open to objection.

Eder's Process.—The number of weighings makes this method tiresome. The objection to taking an aliquot portion of ether applies here also. The results as sample C agreed well with the B.P. and the U.S.P.; the one result on sample A was low, but this could not be confirmed owing to lack of material.

Van Itallie's Process.—The alkaloid is somewhat highly coloured. The quantity of drug (15 gm.) is large com-

coloured. The quantity of drug (15 gm.) is large compared with the weight actually used for the final titration (5 gm.). The titration figure with N/10 acid is too small. N/20 acid and alkali in these titrations is to be preferred. The results tend to be low.

#### Belladonna Extract

The methods used for the extracts were those of:—
(1) The B.P.; (2) French Codex; (3) U.S.P. X; (4) Van
Itallie; (5) D.A.B. VI.

Van Itallie's Process.—1.5 gm. of belladonna extract is dissolved in 5 c.c. of distilled water, adding two drops of diluted sulphuric acid. The solution is shaken with 30 c.c. of ether and 4 c.c. of liquid ammonia, 3 gm. of powdered gum tragacanth added, the mixture again shaken, and the ether distilled from 20 c.c. of the clear shaken, and the ether distilled from 20 c.c. of the clear liquid (corresponding to 1 gm. of the extract). The residue is dissolved in 3 c.c. of ether, the ether evaporated, the residue so obtained dissolved in 5 c.c. of alcohol (95 per cent.). The liquid is diluted with 5 c.c. of distilled water, 2 drops of methyl red solution added, and the liquid titrated by means of a graduated burette with N/10 acid until it assumes a rose colouration. 4-4.5 c.c. is required. 1 c.c. of N/10 acid corresponds to 28.9 mgm. of alkaloids.

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The B.P. Process.—The method is not intended for The choice of solvent is not a happy one; a soft extract. a high concentration of acetic acid is obtained on evaporation. If the actual instructions of the B.P. are carried out, the solution from which the alkaloids are to be extracted is acid instead of alkaline. The results tend to be low.

French Codex Process.—The objections are (i) the taking of an aliquot portion of ether; (ii) the use of centinormal solutions; (iii) the use of iodeosin instead of

methyl red as an indicator.

U.S.P. X Process.—This process works very well. The U.S.P. method represents the actual amount of alkaloids in the extract. The average figures are A 2.24 per cent. and 2.85 per cent. on the dry extracts.

Van Itallie's Process.—This is a very rapid process and is very convenient in working, but again the measure-ment of an aliquot portion of ether seems to be somewhat

The results tend to be low.

D.A.B. VI Process.—The alkaloid is rather more coloured than in Van Itallie's process. The results are inclined to be low.

Acknowledgments are made to Mr. Edmund White and to Allen & Hanburys, Ltd.

#### DISCUSSION

The CHAIRMAN, in inviting comments, remarked that this was a very useful summary of the various methods in use. The low results so often obtained were due

to the fact that the extract was not easily exhausted.

Mr. Corfield suggested that the authors had been handicapped by the small amount of material available. Aliquot part processes should not be encouraged. In the British Pharmacopœia process the amount of volatile solvent was so small that it was almost impossible to get complete separation. The differences between the results of the authors, expressed as a percentage, were in some cases considerable.

Mr. A. J. Jones drew the inference that, if we were to have standard processes, we should have to be very careful what processes we chose. He always viewed the estimation of such substances as belladonna extract as assaying by inference rather than by specific results. He suggested that after assay the alkaloid should be extracted, racemised and precipitated.

Mr. Evers, replying to the discussion, said that the results in the paper were obtained strictly in accordance with the conditions laid down. The personal factor was very important in alkaloidal estimation. There was also the time factor: it was supremely important to carry out determinations as quickly as possible, otherwise there might be hydrolysis and low results.

The CHAIRMAN, in closing the session, conveyed to the authors of the papers the thanks of the meeting.

#### Science Section-Wednesday Morning

For the first hour of Wednesday morning's meeting of the Science Section the audience was augmented by delegates of the Society who were waiting for their proceedings to commence, and, incidentally, perhaps, were picking up a few scientific "tips." The first paper taken was :--

#### A New Test for the Activity of Medicinal Charcoal

By HARRY BRINDLE [ABSTRACT]

THE property which active charcoal possesses of absorbing vapours of volatile liquids is utilised to compare the activity of different charcoals. The test consists in exclosed vessel until it ceases to increase in weight. Various charcoals, dried at 110° C.—120° C. and allowed to cool in a desiceator, were exposed in thin layer to air saturated with the varous of water ablenting about the staturated with the varous of water ablenting about the same control of the same the same control ated with the vapour of water, chloroform, alcohol and turpentine separately. Chloroform was unsatisfactory. as it was difficult to weigh the charcoal when saturated

on account of the rapid loss of weight when exposed to air. Water, alcohol and turpentine were all satisfactory. In using vapours differing in character, the results were not striotly comparable, but there was a close similarity, showing that the test was generally applicable. Within normal limits, temperature has not much effect upon the amount of vapour adsorbed, and unless great accuracy is desired it is unnecessary to adjust to any definite temperature. The following procedure is recommended:—Place the charcoal in a tared shallow vessel to form a thin layer over the bottom. A flat porcelain basin or a Petri dish is suitable. Dry for one hour at 110° C.—120° C., allow to cool in a desiccator and weigh. Place in a desiccator containing water and weigh at intervals of about twenty-four hours. When there is no further increase in weight, the percentage of moisture absorbed can be calculated. Some charcoals absorbed the full amount, and very seldom was less than 90 per cent. of the full amount absorbed, in the first twenty-four hours. Three days were usually sufficient for any charcoal to become saturated. A satisfactory apparatus can be improvised by placing water in a shallow vessel such as a saucer, arranging the charcoal in a thin layer in any shallow container and inverting a wide tumbler over the charcoal, with the edge dipping below the surface of the water. There was no condensation on the inside of the dish in any of the experiments. When alcohol and tunpentine was used in the desiccator, a vessel containing lime was placed inside to absorb moisture. Care must be taken not to expose the dried charcoal to the atmosphere for a longer period than necessary, as active charcoal absorbs moisture from the air with great rapidity. Five per cent. of moisture may be obsorbed after a few minutes' exposure. The results in percentage of vapour by weight adsorbed by the charcoals were as follows:—

Kind of charcoal used	Per cent. of moisture adsorbed	Per cent. of alcohol vapour adsorbed	Per cent. of tur- pentine vapour adsorbed
1. Pulv. carbo. lig. levig. from wholesale house A	9,55	9,43	7,63
2. Pulv. carbo. lig. from whole-sale house B	12.09	10.82	3,49
3. Gas mask charcoal, 1916 (British)	24,74	21,60	23,83
(American)	28.95	23.43	24,75
wholesale house A.  6. Gas mask charcoal, 1918	39.73	38.24	35,62
(German)	61.07	56.22	56.41
7. Medicinal charcoal from manufacturer C	80.27 83.62	62.5 84.49	77.22 86.89
o. Experimental active charcoal	00.02	51,15	55.65

Charcoals show a similar ratio of activity whatever the vapour used, the only exception being charcoal (No. 2) which had an abnormally low turpentine adsorption. The actual amounts of alcohol and turpentine adsorbed are very similar, the figure for water being generally slightly higher. For purposes of comparison the author includes a table giving the number of c.c. of 0.02 N. benzoic acid adsorbed by 0.1 gm. each of the charcoals. The method used for determining this was a slight modification of Millar's method ("J. Phys. Chem.," 1926, 1162). The eight samples range from 2.9 (No. 1) to 23.05 (No. 8). Although, as was to be expected from the widely different capitities, the protocol of activity shown are not quite the conditions, the ratios of activity shown are not quite the same as those obtained by the vapour tests, the charcoal fall into practically the same order of activity. charcoals varied much in methods of manufacture and in source. Under the conditions described above, a charcoal which absorbs below 15 per cent, of moisture may be classed as inactive. From 15 to 30 per cent, absorption shows some activity. Active charcoal will absorb from 50 to 100 per cent. of moisture. Turpentine and alcohol vapours used under similar conditions gave results showing similar absorption figures. The water figure is ing similar absorption figures. The water figure slightly higher than that for alcohol or turpentine. test is recommended as giving reliable results with the minimum of trouble and apparatus.

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#### A Comparison of the Adsorption Powers of Medicinal Charcoals

By HARRY BRINDLE [ABSTRACT]

In spite of results recorded of the use of charcoal in Asiatic cholera, dysentery, diarrhœa and dyspepsia, it is still seldom used in Britain for such diseases. Active charcoals are now becoming readily available for medicinal purposes, but practically the whole of the medicinal charcoals commonly sold are comparatively inactive. The adsorption powers of eighteen different charcoals were compared by the following tests:—(1) The writer's moisture adsorption test; (2) a modification of Miller's benzoic acid adsorption test ("J. Phys. Chem.," 1926, 1162); (3) the mercuric chloride test of the German Pharmacopeia. While any of the tests will distinguish an inactive from an entire charcoal, the actual formers an inactive from an active charcoal, the actual figures obtained for comparative activity varied according to the test used. No difficulty was experienced in obtaining concordant results when the moisture or benzoic acid tests were repeated on the same charcoal, but the results of the German Pharmacopæia test were erratic.

-				
	Kind of charcoal used	Per cent. of moisture adsorbed by the dry charcoal	C.c. of N/0.02 benzoic acid adsorbed by 0.1 gm. of dry charcoal	C.c.of N/0.1 mercuric chloride adsorbed by 0.1 gm. of dry charcoal
	Pulv. carbo. lig. levig. from wholesale drug firm A	9.55	2.9	1,35
2.	Powered wood charcoal from manufacture: B	:	4.1	0.7
3.	Pulv. carbo, salicis from whole-	F 00	3.2	1
4.	sale drug firm C	7.90	3,2	1.5
E	drug firm D	9.79	3,0	1.9
	drug firm E	12,09	4.1	1.0
6.	Pulv. carbo. lig. levig. from wholesale drug firm F.		2.8	1.7
7.	Powdered animal charcoal (un- purified) from drug firm D	16,69	5.4	1,1
	Proprietary wood charcoal as advertised and sold to the public	_	3,5	2,0
9.	Gas mask charcoal, British,	24.74	8.9	1.45
10,	Medicinal charcoal sold under			
11	brand name	68.64	7.5	3,6
	suitable for medicinal use	41.75	12,15	4.5
	Gas mask charcoal, American,	28.95	13.5	5.2
13.	Carbo, animal, pur., B.P., 1885	-	15.3	4.2
14.	Carbo, animal, pur. from drug firm A.	39.73	14.3	5.3
	Charcoal sold under brand name	97,04	9,4	2.4
	Medicinal charcoal from manu- facturer H	80.27	14.9	3-7
17.	Gas mask charcoal, German,	61,07	14.1	6,2
18.	Experimental charcoal	83.62	23.05	6.1
		,		·

To compare results the most active charcoal (No. 18) was given an empirical activity number of 100. The mean of the activities was obtained for each charcoal. (The author tabulates his comparison.) Charcoals 1 to 7, and possibly 8, could be classified as inactive. This group includes all the charcoals supplied by wholesale drug firms and charcoal manufacturers as ordinary medicinal charcoal, pulv. carbo. lig., etc. These would be the charcoals normally dispensed by the pharmacist when pulv. carbo. lig. was ordered by a prescriber. Charcoals 9 to 18 are definitely active. Nos. 10 to 18 show considerable activity with all the tests used. The most active charcoals gave figures indicating an activity from 5 to 7 times as great as the ordinary samples. Gas from 5 to 7 times as great as the ordinary samples. Gas adsorption tests used for gas-mask charcoal indicated a much greater difference in activity. Active charcoals would often show 30 to 40 times the activity of ordinary samples, which were invariably useless for gas masks. In these tests, rapidity of adsorption was the prime factor rather than total adsorptive power. Modern research has shown that the chief factor governing the

activity of charcoal is a slow oxidising action during manufacture. This can be obtained by passing a slow current of air or a current of steam over the charcoal during carbonisation. All charcoal intended for medicinal use should be prepared in a way which ensures its activity, and reliable tests should be adopted in the new Pharmacopæia.

#### DISCUSSION

The CHAIRMAN said that at the present time our knowledge of charcoal and activated charcoal was more complete than it was when the B.P. was compiled, and a revision of the monograph therein stood in need of revision in the light of present-day knowledge. Factors to be considered in the selection of a charcoal were gas adsorption and adsorption of substances from solution. wished to know if these properties ran parallel. Coconut charcoal had good gas adsorption properties, but was useless for decolorising purposes. Tests involving the adsorption of methylene blue or caramel from solution were worth an extended trial.

Dr. LINNELL (London) said that the activity of charcoal had been a bone of contention, and they did not know exactly what was meant by activated charcoal. There was no test for activity, but merely a correllation of different tests. The charcoals did not appear in the same order as when the test was applied by adsorption of substances from solution. He wished to know whether the figures obtained were not simply due to condensation of moisture vapour in the intercellular spaces. The activity of charcoal depended on its physical structure, and there was difficulty in obtaining uniformity. Referring to smokeless fuel research, active coke was thought to burn better than the normal type, and tests were developed to discriminate between the differing activity of coke. Unit volume of air was passed over unit volume of coke at a definite temperature, and the carbon dioxide measured to express the activity of coke. It was found that the most active coke would not burn. More work was required to be done before "active" charcoal was placed in the British Pharmacopæia. Method of production should be specified rather than a figure which we did not know how to interpret the world like to know how the property the court the proof of the content of the content that a figure which we did not know how to interpret the proof of the content that the proof of the content that the proof of the content that the content of pret. He would like to know if the author thought that the figure had anything to do with the condensation of water vapour in the same way as dust would affect the condensation of water vapour in air.

Mr. F. H. CARR said that the type of substance to be adsorbed should be defined and the amount adsorbed in a limited time should be noted. He would suggest the adsorptive power on bases (dyes), toxins or a vitamin, something that could be measured.

Mr. Brewis suggested that account should be taken of the ash of the charcoal to be examined. Wood-charcoal ash was less than that of non-treated animal charcoal. A comparison of bone charcoal made from bones of porous structure showed them to be more active at first, but the activity was not maintained as with charcoal from more compact oone. He would like to see a comparison of wood charcoal from wood of light fibrous structure and from more compact wood. He thought the adsorptive power of these charcoals for toxic substances would vary in the same order, but in a different order in the case of gas adsorption or for decolorisation.

Mr. Evers thought that the effect of temperature would vary the result, and also that the vapour pressure of water vapour in the apparatus would make a difference. He agreed with Dr. Linnell as to the ash. A medicinal charcoal depended on its adsorption power of gases, and

he suggested two tests, one for gas adsorption.

Mr. A. J. Jones referred to charcoals for cleaning in sugar manufacture. He stated that re-vivified charcoal could only be used a certain number of times.

Mr. Brindle, in reply, said it was a large subject, and he had no intention of entering into theoretical considerations as to why charcoal gave different results with different tests. Animal charcoal was more active than wood charcoal owing to the evolution of gas in its preparation. Wood charcoal, irrespective of its source, could be made as active as animal charcoal as a result of research work done during the war. The British used

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birch wood for charcoal preparation, but the Germans were using pine. It was not until we found a process of activation of charcoal that pine could be used. Medicinal activation of charcoal that pine could be used. Medicinal charcoal adsorbed substances from solution and gases. Charcoal had never been tested for adsorption of gases; everyone had concentrated on adsorption from solution, but its action was probably adsorption both from solution and of gases. The moisture test which he had described could be carried out in a pharmacist's shop. With regard to condensation of moisture in pores, adsorptive power depended on surface tension, and with the so-called permanent gases there might be liquefaction on account of the surface tension. The greater the condensation, the greater stripe would the charged by the dependent of the surface tension. more active would the charcoal be. As to the adsorption of basic substances from solution, different charcoals would not show the same specific action. The examination of ash would be a piece of future research.

The next paper taken was :-

### Mercury Ointment

By J. H. FRANKLIN.

[ABSTRACT]

During the discussion on the paper "Some Preparations of the B.P. 1914—Notes and Criticisms," which the author read at one of the evening meetings of the Pharmaceutical Society, Mr. Gulliver said that "he did not think the pharmaceutical society of the description of the second sec the pharmacist of to-day had the time to prepare mercury ointment," and he pointed out that the addition of a small quantity of anhydrous wool fat facilitated the "killing" of the mercury.

In order to ascertain approximately the length of time required to make 1,000 gr. of the B.P. ointment, six experienced assistants each prepared a sample. Particles of mercury were visible when the ointment was examined after triturating for one hour, and some samples, when examined after triturating for two hours, still showed particles of mercury visible to the naked eye. In making these samples the prepared suet and benzoated lard were previously melted and stirred until cool; the mixture was then added in small quantities to the mercury and triturated. As the directions in the Pharmacopæia are so ambiguous, further samples were made using a base prepared by melting the suct with an equal quantity of benzoated lard and stirring until cool, triturating the mercury with this mixture and adding the remainder of the benzoated lard gradually. These samples were also unsatisfactory and particles of mercury were still visible to the paked even when they were experience after being to the naked eye when they were examined after being triturated for one hour. For "killing" the mercury, the formula given below (No. 1) is much superior to that of the B.P.:—

Mercury ... ... ... ... 30 parts Hydrous lanolin ... ... 10 parts White petroleum jelly ... ... 50 parts

Triturate the mercury with landin and half its weight of white petroleum jelly until the globules of mercury are no longer visible under a lens magnifying ten diameters, and then add gradually the remainder of the white petroleum jelly and mix thoroughly.

The same assistants who had conducted the previous experiments each prepared a 1,000-gr. sample according

to this formula and experienced no difficulty in "killing" the mercury within twenty minutes.

The Pharmacopæia Committee may be somewhat diffident about making such a drastic change in the formula, in view of the antiquity and much-esteemed properties of this ointment, especially as the absorption of the mercury by the skin may be influenced to a large extent by the rate of absorption of the base employed. In his work on the absorption by the skin of various ointment bases, Professor R. B. Wild ("B.M.J.," June 26, 1926), concluded that lard was the best-absorbed and the most effective medium in carrying the mercury through the skin. In order to meet any criticism which may be made as to the absorption of the ointment when prepared by the formula given above, and owing to the lack of opportunity to test it for this property, the following formula tunity to test it for this property, the following formula (No. 2) was tried:—

Mercury			•••	30 parts
Hydrous lanolin	•••	•••	•••	10 parts
Benzoated lard	•••	•••	_ ***	50 parts
Prepared suct				10 parts

Triturate the mercury with the landlin and an equal weight of the benzoated lard and suet mixture until the globules of mercury are no longer visible under a lens magnifying ten diameters, and then add gradually the remainder of the benzoated lard and suct mixture and mix thoroughly.

It was anticipated that the formula could be still further improved upon, forty-five minutes for the extinction of the mercury being hardly satisfactory, and the following (No. 3) was tried:—

... 30 parts ... 15 parts ... 7½ parts ... 41½ parts Mercury Hydrous lanolin ... Pale yellow beeswax ••• ... Benzoated lard ... ...

Melt the lard and beeswax together and stir until cool. Triturate the mercury with the Janolin and an equal weight of the benzoated lard and beeswax mixture until globules of mercury are no longer visible under a lens magnifying ten diameters, and then add gradually the remainder of the benzoated lard and becswax mixture and mix thoroughly.

This sample was most satisfactory and can be strongly This sample was most satisfactory and can be strongly recommended for inclusion in the next edition of the British Pharmacopœia. The mercury is completely "killed" within twenty minutes, no globules of mercury being visible when the ointment was examined, even under a lens magnifying twenty diameters. Anhydrous lanolin does not appear to be so effective in "killing" the mercury as the hydrous. The use of a flatbottomed mortar facilitates the "killing" of the mercury. If no alteration is made in the formula for uny cury. If no alteration is made in the formula for ung. hydrarg in the next edition of the B.P., the directions should at least be revised, and a magnifying glass, magnifying from five to ten diameters, should be used to ensure that the particles of mercury are in a finely divided state. No ointment can be considered satisfactory which does not comply with this latter condition. If the landlin and petroleum jelly base is adopted, white petroleum jelly should be used, as the yellow variety imparts a

green colour to the ointment.

The following formula was tried among others, and proved to be a distinct advantage from the point of view

of expedition over No. 1 and No. 3:-

The formula very much resembles the B.P. one; the mercury disappears with ten minutes' rubbing, and is not visible even when a 20-diameter lens is used. A far more satisfactory product is obtained by this method in one-tenth the time taken to prepare the B.P. ointment.

### DISCUSSION

The CHAIRMAN, in opening the discussion, remarked that the Conference was much indebted to Mr. Franklin for his paper, especially in view of the fact that the British Pharmacopeia would soon be under revision. He (the Chairman) thought that perhaps Mr. Franklin had not spoken quite the last word. Beeswax in an ointment was apt to crystallise under some conditions, and hydrous landlin might possibly lead to trouble. The United States

Pharmacopoia contained a little mercury oleate.

Mr. J. R. Hill inquired whether there was any objection to a small proportion of calcium carbonate in the finished ointment. Incorporation of the mercury was easy

with calcium carbonate and ether.

Mr. Brewis expressed the view that water was undesirable in the presence of a fat: it developed acidity. Mercury oleate or a little stale ointment had been used to facilitate mixing. The seorce of the lard—i.e., the part of the animal from which it was obtained—should be strictly defined.

Mr. Franklin, replying on the points raised, said that there had been no sign yet, in his experimental batches of the ointment, of the beeswax crystallising. Some simple method alternative to the present official one was wanted.



He did not think there was any objection to the presence of calcium carbonate. Ointments prepared with benzoated lard kept very well, and a little water was not likely to cause rancidity within a reasonable time. The days of rancid mercury ointment as a commercial article were over.

The CHAIRMAN voiced the thanks of the Section to Mr. Franklin.

The next paper, presented by Mr. F. H. Carr, was:-

### Compound Tincture of Benzoin

By T. TUSTING COCKING, F.I.C.

### [ABSTRACT]

The "total solids" in compound tincture of benzoin consist chiefly of free benzoic and cinnamic acids, a variety of esters of these acids, resinous substances, and a little volatile oil. The percentage of "total solids" present is not a true guide to its medicinal value. Before considering any standards for compound tincture of benzoin, it is essential that the constituent drugs should be characterised sufficiently to allow of such standardisation. That the present B.P. characters and tests for aloes, balsam of tolu, and benzoin are insufficient for this purpose is shown by the following data:—

Aloes.—10 per cent. of moisture is allowed, and the drug is stated to be "almost entirely soluble in alcohol (60 per cent.)," but no mention is made of the solubility in 90 per cent. alcohol—the menstruum used for compound tincture of benzoin. In a number of samples examined from 4 per cent. to 8.6 per cent. of dry residue, insoluble in 90 per cent. alcohol, was found. Taking into consideration the B.P. limit of moisture, this means a minimum of 31.4 per cent. of

dry soluble matter.

Balsam of Tolu.—The B.P. makes no mention of either moisture or insoluble matter. The writer has previously pointed out ("Y.-B.P.," 1918, 407) that the moisture may be as high as 3.6 per cent., and since then as much as 11.6 per cent has been found. Usually, however, it varies from 1 to 3 per cent. Insoluble matter has been found to vary between 1 and 9 per cent., but the great majority of samples examined have contained less than 4 per cent. of moisture and less than 4 per cent. of insoluble matter. It follows that there will be a minimum of 92 per cent. of soluble matter present.

Benzoin.—The B.P. limit of 15 per cent. of insoluble matter is a severe one: few commercial samples reach so high a standard as this, and in the opinion of the writer this limit should be raised to 20 per cent. Moisture content is not mentioned in the B.P. monograph, but it may reach as high a figure as 14 per cent., leaving a minimum figure for alcohol-soluble matter of 71 per cent.; this would become 65 per cent. if a limit of 20 per cent. of insoluble matter were accepted.

Prepared Storax.—The B.P. allows 5 per cent. loss on drying, and states that the drug should be entirely soluble in alcohol: this is equivalent to a minimum of 95 per cent. of soluble extractive.

In addition to the variation in the percentage of moisture and insoluble matter, which affects only the amount of "total solids," the three balsamic ingredients of compound tincture of benzoin show enormous variations in their physical and analytical characters. These variations affect the composition of the total solids. Thus it is not to be expected that tincture made from such variable natural drugs as these will be uniform. The author, in conjunction with C. A. Hill and J. D. Kettle, has previously published the results of researches carried out in the B.D.H. laboratories on the analysis and evaluation of: (1) Storax (C. & D., 1912, I, 412, 789); (2) benzoin ("Y.-B.P.," 1918, 407). Since these dates, the routine examination of the three drugs has yielded a long series of analytical data comprising moisture, extractive, acid and ester values and the amounts of free and combined balsamic acids. These figures agree in the main with those already published, but some undoubtedly genuine samples have given figures outside the limits previously recorded. The limits therefore require revision. (A table in the author's paper shows the maximum and minimum figures given by these three drugs over a number of years.) The amount of twoody matter and dross in benzoin is no criterion of its balsamic value, as an apparently poor sample may yet

contain a high percentage of balsamic acids. The methods of analysis used for the above balsamic drugs have been usefully adapted to the examination of compound tincture of benzoin. The complete scheme of analysis comprises the determination of:—

(1) Total Solids.—In the following table is shown the calculated percentage of "total solids" in a tincture made from drugs containing the minimum amounts of extractive matter:—

	Minimum percentage of dry extractive	Percentage (w/v) of drug used in pre- paring the tincture	Calculated percentage (w/v) of total solids
Aloes Balsam of tolu Benzoin Prepared storax	82 92 71 95	2.0 2.5 10 7.5	1.64 2.30 7.10 7.125
-		22.0	18.165

The following minimum percentage limits (w/v) have been recommended: 15.85 (F. W. Fletcher); 17.0 (G. F. Merson); 18.0 (H. Wippell Gadd); 18.0 (A. Wright); 17.5 (J. C. Umney); 17.7 (J. E. Brunker); 16.5 (Irish Local Government Board).

The usual method for the determination of tincture solids is to evaporate and dry the residue in a flatbottom dish at 100°. In the case of tinctures containing volatile constituents this method gives rise to very variable results. For some years the present author has adopted, with very satisfactory results, the method of drying to constant weight in vacuo over sulphuric acid at laboratory temperature. The figures given by this method are from 1.5 to 3 per cent. higher than those obtained by drying at 100° for one hour, and agree very closely with the figures calculated from the analytical data of the ingredients. (A table supplied by the author shows the figures for total solids obtained by this method of drying compared with those given by drying at 100° for one hour. All determinations were carried out by drying 5 c.c. of the tincture in flat-bottom nickel dishes 11 cm. diameter, and the average time required to dry to constant weight in vacuo was forty-eight hours. The average difference between the weights obtained by the respective methods was 1.94 per cent.)

(2) Acid Value.—20 c.c. of the tincture is diluted with

(2)  $Acid\ Value$ .—20 c.c. of the tincture is diluted with 50 c.c. of neutral alcohol and titrated with N/1 alcoholic retash, using phenolphthalein as indicator.

150 c.c. of N/1 alcoholic potash is added and the whole boiled under a reflux condenser for one hour. The excess of alkali is then titrated with N/1 sulphuric acid.

(4) Saponification Value.—This is equivalent to the sum of the acid and ester values. It should be noted that although the saponification value is the sum of the acid and ester values, it is necessary when dealing with maximum and minimum limits to give the three values. The present B.P. gives limits for acid and saponification values for balsam of tolu, but none for ester value, and the difference between the maximum acid value and the minimum saponification value gives an ester value very much lower than is ever given by a genuine balsam. It has been found convenient to calculate the acid, ester and saponification values for the tincture to the corresponding values for the total solids (dried in vacuo) for comparison with the corresponding values for the extractive matter of the balsams.

(5) Free Balsamic Acids.—2 gm. of light magnesium oxide is diffused through 20 c.c. of the tincture, 100 c.c. of water and 20 c.c. of xylene are added and the whole boiled under a reflux condenser for one hour. After cooling, the liquids are filtered through a Buchner filter, and the aqueous liquid separated from the xylene, which is returned to the flask together with the residue on the filter and boiled a second time with 100 c.c. of water. The aqueous liquid is separated as before, the boiling repeated a third time with 100 c.c. of water, and the combined aqueous liquids washed once with ether. The balsamic acids are liberated by acidifying with hydro-



chloric acid and extracted with ether: the ethereal solution is evaporated to low bulk on a water bath and the drying completed in vacuo over sulphuric acid at labora-The dry balsamic acids are then tory temperature.

weighed.

(6) Total Balsamic Acids.—The saponified and neutralised liquid from the saponification of 20 c.c. of the tincture is evaporated to remove the bulk of the alcohol, and the residue dissolved in 100 c.c. of water; 5 gm. of light magnesium oxide and 20 c.c. of xylene are added, and the whole is boiled under a reflux condenser for one hour. The aqueous liquid is separated and the boiling repeated twice, the process being continued as described above for the free balsamic acids.

(7) Combined Balsamic Acids.—The difference between the total and free balsamic acids represents the com-

the total and free balsamic acids represents the combined balsamic acids. The figures for free, combined and total balsamic acids are calculated on the tincture and also on the total solids (dried in vacuo) for comparison with the figures for the extractive of the balsams. (A number of typical analyses of the tincture are tabulated by the author, who gives, first, the figures for nine ordinary routine samples of B.D.H. manufacture; next, the corresponding figures for nine commercial samples obtained from other manufacturers; and lastly, the maximum and minimum figures of the two preceding tables, together with those calculated from the analytical data of the crude drugs.)

Maximum Variations in Compound Tincture of Benzoin

	Calculated from figures for drugs	B.D.H. figures	Other commercial tinctures
Total solids (dried in vacuo) Acid value Ester value Saponification value	16.9%-21.0% 12.25-26.1 10.7-22.2 25.9-42.6	17.0%-19.6% 11.2-14.8 16.5-22.4 29.0-37.2	17.3%-21.8% 8.4-13.2 17.4-21.6 25.8-32.8
Free balsamic acid Combined	2.10%-3.68%	2.66%-3.24%	1.84%-3.26%
balsamic acid	2.12%-5.51%	2.63%-3.51%	2.26%-3.34%
acid	4.50%-8.79%	5.51%-6.62%	4.1%-5.82%
Calculated on the total solids. Acid value Ester value Saponification value balsamic acid Combined balsamic acid Total balsamic acid	79-121 60-102 154-194 11.2%-17.3% 10.7%-32.1% 24.0%-47.8%	61.3-77.8 88.8-123.58 156.1-198.1 14.3%-18.2% 13.7%-17.9% 29.4%-34.8%	42.8-60.5 9.8-110.8 145.0-162.0 10.2%-15.0% 11.9%-17.3% 23.6%-28.2%
Ratio: Acid value Ester value Ratio:	0.81-1.96	0.53-0.77	0.39-0.67
Free acids Combined acids	0.45-1.34	0.89-1.23	0.63-1.27

### DISCUSSION OF RESULTS

The most striking difference between the figures obtained from the analysis of the tincture and those calculated from the analytical data of the drugs is the ratio between the acid and ester values. While the calculated from the analytical data of the drugs is the ratio between the acid and ester values. While the calculated figures vary between 0.81 and 1.96, the whole of the tinctures give ratios considerably less than the calculated minimum. In addition to this the acid values (reckoned on the total solids) are considerably lower than the calculated values, while the reverse obtains with a number of the ester values. This decrease in acid value is not easily explained, as it does not correspond with any decrease in the free balsamic acids. The figures in the first column of the author's final table represent the the first column of the author's final table represent the extreme possible variations obtainable using the drugs referred to, but it is highly improbable that any genuine tincture would ever reach these extreme limits. A tinctincture would ever reach these extreme limits. A tincture with a figure of 21 per cent. for total solids would

indicate that the constituent drugs contained the following maxima of dry extractive matter:—Aloes 91 per cent., balsam of tolu 98.7 per cent., benzoin 92.8 per cent., and prepared storax 99.1 per cent.; a combination such as this would not occur in any commercially made tincture, and the author views with suspicion any tincture containing over 20 per cent, of total solids. One tincture examined contains 21.8 per cent. of total solids, an impossible figure for a B.P. tincture. The acid values of these tinctures are on the low side, more especially when calculated on the total solids, and in addition, the saponification values (on the total solids) are below the minimum.

The above research has been carried out in the labora-tories of The British Drug Houses, Ltd.

### DISCUSSION

The CHAIRMAN said that the paper contained a wealth of figures, and it was not easy to grasp them readily. Compound tincture of benzoin had stood the test of time, and to day it was to be obtained at low prices. This was the first time they had had so complete a scheme for the analysis of the tincture.

Mr. Mann referred to the work of himself and Mr. J.

Mr. Barclay in 1902.

Mr. Brewis said this was an example of the thorough, painstaking work of Mr. Cocking. The Pharmacopocial examination for the constituents was more or less hopeless. He suggested the usefulness of the figures to analysts. He mentioned that balsam of tolu and the other ingredients varied very considerably.

Mr. Franklin suggested a standardisation of method

for determination of total solids.

The next paper, presented by Mr. F. H. Carr, taken was :-

### The Testing of Barium Sulphate for X-Ray **Purposes**

By T. Tusting Cocking, F.I.C.

[Abstract]

HAVING regard to the large doses in which barium sulphate is administered before x-ray examinations, purity is a matter of extreme importance, and the most careful consideration should be given to the tests used for the detection of impurities. It seems desirable that definite standards of purity should be adopted, and this of necessity means standardisation both of the tests employed and of the conditions under which they are carried out. The author sets out quotations from various authorities, and after critical comparisons puts forward the British Drug Houses, tests as tentative standards. The other Drug Houses, tests as tentative standards. tests referred to are those of the British Pharmaceutical Codex, 1923, the U.S.P.X., the Deutsches Arzneibuch VI, and the recommendations of H. Bodsworth ("Phar-

VI, and the recommendations of H. Bodsworth ("Pharmaceutical Journal," 1927, II, 639).

Soluble Barium Salts.—The B.D.H. test is:—Boil 10 gm. barium sulpbate with 100 c.c. of 10-per-cent. acetic acid for ten minutes and filter. Evaporate 50 c.c. of the clear filtrate to dryness and weigh the residue. Digest this residue with 20 c.c. of water and filter; to the clear filtrate add 1 c.c. of dilute sulphuric acid. No turbidity propositions also also have been according for one or precipitate should be produced on standing for one

The tests fall naturally into two classes:—(1) Those relying on the use of acetic acid for the solution of any soluble barium (B.P.C., D.A.B. VI, and B.D.H.). (2) Those using hydrochloric acid as the solvent (U.S.P.X. and the London Hospital). Before considering these tests in a little of four proposite about the solubility of horizontal propositions. in detail, a few remarks about the solubility of barium sulphate may not be out of place. Although considered one of the most insoluble substances, barium sulphate is nevertheless appreciably soluble in aqueous solutions of organic and inorganic acids and salts. In the presence of soluble barium or sulphates the solubility is very much decreased. Thus it is almost an impossibility to remove barium from a solution of any salt by means of sulphuric acid unless an excess of the latter is used and vice versa. It has been found that dilute hydrochloric acid (3 per cent.), boiled with pure barium sulphate and filtered,

contains sufficient barium sulphate in solution to give a turbidity on addition of dilute sulphuric acid, or of barium chloride solution, but not with calcium sulphate solution, even on long standing. Thus in the presence of bydrochloric acid, golding sulphate is not a sensitive solution, even on long standing. Thus in the presence of hydrochloric acid calcium sulphate is not a sensitive reagent for barium. From this it is evident that the test for soluble barium must not be carried out on a simple hydrochloric acid extract of the barium sulphate, as, owing to the solubility of barium sulphate itself, a positive reaction may always be obtained and this reaction will not distinguish between a trace of soluble barium and barium sulphate in solution. For this reason the test as used in the London Hospital cannot be recommended, first because it is insenitive owing to the use of calcium sulphate as a reagent, and secondly because the simple hydrochloric acid extract of the barium sulphate will always contain sufficient barium sulphate in solution to give a positive reaction with sulphuric acid, and this reaction is no evidence of the presence of soluble barium salts. The method of the U.S.P.X., although hydrochloric acid is used as a solvent, is free from the objectional of the U.S.P.X. tionable features of the above test. By evaporating the extract to dryness and treating with very dilute hydrochloric acid, the bulk of the barium sulphate dissolved by the acid is left behind as insoluble. A second evapora-tion to dryness and extraction with water alone gives a solution practically free from acid and containing the whole of the barium, other than the sulphate, soluble in dilute hydrochloric acid, while the use of dilute sulphuric acid as a precipitant ensures the detection of any trace of barium in the solution. The methods adopted by the B.P.C., D.A.B. VI., and B.D.H. are almost identical, and the strength of the acetic acid used as solvent is the same. In the B.P.C. and D.A.B. VI. the mixture is simply heated to boiling, but in the B.D.H. it is boiled for ten minutes. After filtration the D.A.B. VI tests the filtrate directly for barium by means of a few drops of allows gulbburg acid while the B.P.C. and B.D.H. tests

direct a portion of the filtrate to be evaporated to dryness on a water bath, and the filtered aqueous extract of the residue to be tested with dilute sulphuric acid for barium. Barium sulphate is not absolutely insoluble in acetic acid, and the methods of the B.P.C. and B.D.H. are therefore preferable to that of the D.A.B. VI.

Acid-Soluble Matter.—No test is given by the B.P.C., D.A.B. VI, or H. Bodsworth. The B.D.H. and the U.S.P.X. tests are included in that for soluble barium. This test is a useful one and should not be omitted, as

dilute sulphuric acid, while the B.P.C. and B.D.H. tests direct a portion of the filtrate to be evaporated to dryness

U.S.P.X. tests are included in that for soluble barium. This test is a useful one and should not be omitted, as it will reveal the presence of accidental contamination. Sulphide.—The B.D.H. one is included in the test for arsenic. The tests all rely on the colour produced on lead acetate paper by any hydrogen sulphide evolved on treatment of the barium sulphate with dilute hydrochloric acid. The U.S.P.X. and B.D.H. use dry lead acetate papers, while the D.A.B. VI and H. Bodsworth use filter paper moistened with lead-acetate solution. The U.S.P.X. lead-acetate papers are in strips 6 mm. × 8 cm., and presumably one of these is intended to be suspended in the flask or beaker in which the barium sulphate and hydrochloric acid are placed. The D.A.B. VI uses a flask, and we can assume that the mouth of this will be about 25 mm. in diameter. H. Bodsworth uses a 250-c.c. beaker—this is about 80 mm. in diameter—while the B.D.H. uses a rolled-up lead paper 100 mm. × 40 mm. in a tube 5 mm. internal diameter. It has been found that dry lead actate paper is very much more sensitive to hydrogen sulphide than filter paper moistened with lead-acetate solution. Of the four tests, that used by the B.D.H. is the most sensitive. The whole of the gas evolved from the reaction mixture passes through the tube of the apparatus and impinges on the bottom of the roll of lead paper, and very minute quantities can be detected.

Sulphite (including Thiosulphate).—A special test such as that of the D.A.B. VI is unnecessary if the B.D.H. arsenic test is used. The nascent hydrogen reduces the sulphite with formation of hydrogen sulphide, which causes blackening of the lead-acetate paper. (This test does not distinguish between sulphide, sulphite and thiosulphate.)

Arsenic.—The B.D.H. test is:—Treat 10 gm. barium sulphate with 50 c.c. of hot water, 10 c.c. of stannated hydrochloric acid As.T. and 10 gm. of granulated zinc in the Gutzeit apparatus described in the B.P. 1914. The lead paper should not be blackened more than that of a blank test (showing absence of sulphide, sulphite and thiosulphate), and the stain on the mercuric chloride paper should not indicate more than 1 part of arsenic (As.O.) per million. Bettendorff's test as used in the B.P.C. is quite useless, as the reaction depends upon the presence of concentrated hydrochloric acid. The U.S.P.X. test is satisfactory as far as it goes, but it is not nearly sensitive enough as a limit-test for an article that is used in 8-oz. doses. An amount of arsenic corresponding to 10 parts per million causes a just perceptible darkening: 20 parts per million shows a very faint but definite colour; the limit of the test is therefore about 20 parts per million, but will depend upon the analyst's interpretation of the words "dark coloration." The sodium hypophosphite solution used in the D.A.B. VI is prepared by dissolving 20 gm. of sodium hypophosphite in 40 c.c. of water and pouring into 180 c.c. of fuming hydrochloric acid. After allowing to settle, the clear colourless liquid is decanted off and used as the reagent. The test is of about the same degree of delicacy as that of the U.S.P.X. The test described by H. Bodsworth is vitiated by the evaporation to dryness of the hydrochloric acid extract of the barium sulphate. Arsenic is volatile with hydrochloric acid unless an oxidising agent such as bromine is present during the evaporation: thus the whole of the arsenic may be lost. Apart from this, there is no necessity to use bromine with the hydrochloric acid for taking up the residue (presumably the 100 c.c. of this is a misprint for 10 c.c.). The B.D.H. test will detect 0.1 part per million; it is easily carried out, and at the same time includes a test for sulphide, sulphite and thiosulphate. Heavy Metals. The B.D.H. te

Heavy Metals. The B.D.H. test is:—To the remaining portion of the filtrate from the soluble barium test add 50 c.c. of clear saturated hydrogen sulphide water. No darkening should occur. The B.P.C. and B.D.H. tests are identical, and will detect lead, copper, mercury, bismuth, tin and zinc. The heavy metal test of the U.S.P.X. is similar to the above: "No colour should be produced on saturating with hydrogen sulphide gas, and after the subsequent addition of ammonia to render the solution alkaline a greenish colour may be produced, but no precipitate within one minute." The D.A.B. VI carries out the test in an ammoniacal solution after a treatment to remove iron, which is usually present in traces. This removal of iron is a dangerous proceeding, as the precipitation of ferric hydroxide from a solution containing small quantities of lead is apt to carry down with it the whole of the lead (Wilkie, "J.S.C.," 1909, I, 636). Thus a negative reaction with this test is no proof of the absence of lead. The tests of the London Hospital for the various heavy metals leave much to be desired. That portion of the test carried out on the filtrate from the soluble barium test is not very sensitive, owing to the presence of hydrochloric acid. The precipitation of traces of lead, bismuth, tin and mercury will be inhibited by the amount of mineral acid present; but on the subsequent addition of ammonia, these metals will precipitate as also will iron, but according to the wording of the test they will be mistaken for nickel or cobalt. The special test for lead is also unsatisfactory. In the first place, the addition of hydrogen peroxide serves no useful purpose, but may prevent any lead present being precipitated as sulphide by oxidising it to sulphate. In the second place, it is not specific for lead—all heavy metals, including iron, will give a darkening provided the sulphide is in excess of the hydrogen peroxide. Thirdly, the quantitative estimation of the lead leaves much to be desired. The colour, which may be due to any or

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sulphide with the brown colour of lead alone. the addition of the lead solution to the control solution the addition of the lead solution to the control solution after the sulphide has been added is inaccurate. It has been shown by C. A. Hill (C. & D., 1905, I, 388) that in order to obtain accuracy in tint and depth of colour it is essential for the lead solution to be added before the sulphide. The special test for silver and mercurous compounds is superfluous, and in any case a small quantity of a mercurous salt would not survive the preliminary boiling with hydrochloric acid. It would be found partly in the filtrate as mercuric salt and partly in the residue as metallic mercury. Boiling with water alone is sufficient to decompose calomel with production of mercuric salt; for this reason the present B.P. orders extraction with cold water when testing calomel for mercuric salt. calomel for mercuric salt.

Phosphate.—The B.D.H. test is :—Boil 2 gm. barium sulphate with 10 c.c. of nitric acid (50 per cent.), cool and filter The filtrate should give no yellow precipitate on adding 5 c.c. of ammonium molybdate solution and standing in a warm place for one hour. There is little to choose between any of the tests except that described by H. Bodsworth, in which case 3 c.c. of nitric acid is insufficient to boil with 5 gm. of barium

Neutrality.—The B.D.H. test is:—Mix 2 gm. of the barium sulphate with 5 c.c. of CO<sub>2</sub> free, distilled water and add 2 drops of B.D.H. Universal Indicator. The colour produced should indicate a PH of not less than 6.0 nor more than 8.0. The B.D.H. test with Universal Indicator is about a thousand times more delicate than the test with litmus paper.

### DISCUSSION

The CHAIRMAN referred to the universal use of barium sulphate in x-ray work in place of bismuth oxychloride.

The barium salts were toxic, and the purity of barium sulphate was a matter of extreme importance. The thanks of the Conference were due to the author of the paper, who had put before them a series of standards. Mr. Bodsworth, who was not present, had sent a criticism of the paper, and his letter was read by the secretary (Dr. Hampshire). The writer stated that comparatively few hospitals were equipped with analytical laboratories. It was sufficient that a dispenser could assure himself that he was using pure barium sulphate. His group of tests was only to serve as a check and not as a complete analysis. Mr. Bodsworth maintained that his (Mr. Bodsworth maintained th worth's) tests served for all practical purposes.

Mr. Carr suggested that pharmacists in hospitals should

have responsibility of doing accurate analyses. It was a matter of grave importance to bring this down to the narrow limits of barium sulphide. Mr. Carr referred to the high standard that had been adopted for arsenic content. The standard was a very high one, but it should

be maintained.

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The author was thanked by the chairman.

The next paper was :--

### Iron and Ammonium Citrate of Commerce: Its Composition and Behaviour in certain Solutions

By G. J. W. FERREY, B.Sc., A.I.C.

[ABSTRACT]

THE utility of iron and ammonium citrate B.P. as a means of administering iron in a palatable, non-astringent and stable form is often marred, from the point of view of elegant dispensing, by the presence of certain impurities in the salt of commerce, which cause the formation of unsightly precipitates in certain mixtures. The British Pharmacopæia gives a process for the preparation of hon and ammonium citrate, which gives a very satisfactory and stable product, but the method is not suited for carrying out on a large scale, and various modifications of the process have been devised by different manufacturers. With a view to selecting batches of iron and ammonium citrate which will not give precipitates when dispensed, it has become the custom among many wholesale houses and manufacturers to observe the

behaviour of the batches in two solutions in particular, i.e. (1) in simple solution in distilled water, and (2) in solution with magnesium sulphate. It has been observed that specimens of iron and ammonium citrate which behave satisfactorily in these solutions generally give satisfaction in other prescriptions. As regards the proportions of reactants to be used in these two tests, there is nothing definite adopted generally, each manufacture or wholesaler fixing his own quantities. As they stand the simple solution test and the magnesium sulphate test are purely empirical, and to that extent unsatisfactory. However, as they have an extremely practical value, from the point of view of the dispensing chemist, and as the validity of an empirical test may be called into question, it seemed desirable to investigate the rationale of the two tests, and either put them on a more scientific basis or refute them altogether.

Nature of Precipitates .- With this object in view, the precipitates in a number of the tests were collected and analysed. There are considerable difficulties when working on a "test-tube" scale in collecting sufficient of these deposits in a pure state for analysis, as the weight of the deposit is in no proportion in the majority of cases to its apparent bulk in the test solution. Further, as these precipitates are indefinite in composition and often mixtures, no useful information would be gained by making a quantitative analysis, a qualitative test being sufficient to give the information required. From a purely qualitative examination of the deposits, therefore,

they appear divisible into five classes:

(a) The precipitate in the magnesium sulphate test, which

consists in the main of calcium sulphate.

(b) A crystalline deposit in the aqueous solution test, which, when well washed and tested, was found to consist of calcium sulphate.

(c) A compact deposit in the aqueous solution test, which consists largely of an insoluble basic sulphate of iron.

(d) A more diffuse precipitate in the aqueous solution test, which is of a colloidal character and contains citric acid in addition to iron and sulphate.

(e) A green deposit, semi-crystalline. from strong (50 per cent.) solutions of iron and ammonium citrate, which takes several days to develop, and is given by strongly acid and by "dusty" specimens of iron and ammonium citrate.

Calcium in Iron and Ammonium Citrate.—The source of the calcium in deposits (a) and (b) was found to be the iron and ammonium citrate itself. The magnesium sulphate and the distilled water used in the tests were found free from calcium, but on ashing the samples of iron and ammonium citrate giving these deposits, and testing the ash, a strong reaction for calcium was obtained in each case. On further examination, it was found that certain specimens of iron and ammonium citrate containing calcium gave no precipitate in the magnesium sulphate test. Quantitative determination of the calcium contained in three specimens of the salt showed that the appearance or non-appearance of a precipitate was not dependent on the percentage of calcium present (see table), but depended upon the condition of the solution. This means, of course, the relative proportions of ammonia to ferrylcitric acid, which appears to be the deciding factor rather than the acidity of the solution as determined by the intensity of reaction to litmus. It was suspected that the calcium present might be bound was suspected that the calcium present might be bound in some way in the ferrylcitrate complex, and that a truer insight into the behaviour of different specimens would be gained by making fuller analyses of the samples. Accordingly, determinations of iron, ammonia and citric acid were made in several cases. Iron was calculated from the B.P. ignition figure, without making a correction for soluble ash, this being considered sufficiently accurate for the present purpose. Ammonia was ciently accurate for the present purpose. Ammonia was determined by the method of Todd, and citric acid by the following method:—1.5 cm. of iron and ammonium citrate is dissolved in 10 c.c. of water and 50 c.c. of normal sodium hydroxide solution added. The mixture is boiled to coagulate the ferric hydroxide, and filtered, the precipitate being well washed with hot water, and the washings added to the bulk. The whole is then boiled until all the ammonia is evalved and after coolboiled until all the ammonia is evolved, and, after cool-



ing, back-titrated with normal hydrochloric or sulphuric acid, using phenolphthalein as indicator. The end-point may be indistinct owing to the absorption of carbon dioxide by the alkaline solution. In this case, 5 c.c. of normal hydrochloric or sulphuric acid is added in excess, and the solution boiled. On cooling, back-titration to phenolphthalein with normal sodium hydroxide gives a sharp end-point. The ferric hydroxide precipitate clings very tenaciously to the last trace of alkali, and even after thorough washing it is often possible to raise the titration figure about 0.1 c.c. of normal soda solution by drying and igniting the precipitate and filter paper, and extracting the ash with a little hot water. The results of the quantitative analysis of iron and ammonium citrate expressed as Fe<sub>2</sub>O<sub>3</sub>, NH<sub>3</sub>, and C<sub>3</sub>H<sub>4</sub>OH(COOH)<sub>3</sub> H<sub>2</sub>O (as in the first part of the table) do not give a clear insight into the constitution of a given sample. Belloni ("Yearbook of Pharmacy," 1921, 221) showed that the different varieties of iron and ammonium citrate were actually very complex ammonium salts of ferrylcitric acid, in which the iron was combined with, or substituted (as FeO) for, one of the hydrogen atoms of the citryl radicle, C<sub>6</sub>H<sub>5</sub>O<sub>7</sub>. A much clearer idea of the constitution of a sample of iron and ammonium citrate is got by expressing the results in terms of the radicles FeO, NH<sub>4</sub>, and C<sub>6</sub>H<sub>5</sub>O<sub>7</sub>, and, as will be seen from an examination of the formulas given by Belloni, the proportions thus obtained are not far removed from the actual percentage composition of the salt. The results calculated in these terms are given in the second part of the table. If one now divides the percentage of each radicle by its molecular weight, the number of radicles combining with another radicle may be obtained by simple division. In column 8 of the table is given the number of C<sub>6</sub>H<sub>5</sub>O<sub>7</sub> radicles combining with one NH<sub>4</sub> radicle, to which attention is drawn on account of its interest in connection with the formation of ca

(samples Nos. 6 and 8—0.84 and 0.71 respectively) gave precipitates of calcium sulphate even in aqueous solution. It may be no more than a curious coincidence that the citric acid is in molecular excess over the ammonia only in the two samples containing calcium, but showing no calcium deposit in the magnesium sulphate test, but the fact is suggestive. The precipitate obtained with certain specimens of iron and ammonium citrate when dispensed with magnesium sulphate is thus primarily due to the presence of calcium as an impurity. The calcium most probably arises from the use of tap-water instead of distilled water in the process of manufacture. It will be noticed that in the B.P. monograph great emphasis is laid on the use of distilled water in the preparation of the salt. The appearance or non-appearance of a precipitate of calcium sulphate apparently does not depend on the degree of acidity as determined by the reaction to litmus, nor altogether on the percentage of ammonia present, but on the molecular ratio of ammonia to citric acid in the particular sample. As will be seen from the table, iron and ammonium citrate free from calcium is already attainable on the commercial scale, and it is suggested that if manufacturers would pay more attention to this point, the difficulty of precipitation in the presence of magnesium sulphate would to a great extent disappear. It may be added that a precipitate of calcium sulphate may be obtained, though less readily, by using sodium sulphate in place of magnesium sulphate, the greater efficiency of the latter probably being due to the dibasic nature of the metallic ion and its closer relationship to calcium. Magnesium chloride will not produce a precipitate; this is due to the known solvent effect of neutral chlorides on calcium sulphate. It follows as a natural corollary to the cause of precipitation with magnesium sulphate that all dispensing of iron and ammonium citrate must be carried out with distilled water; otherwise, the production of precipitates is practically

The Iron Precipitates.—The precipitates under classes (c), (d) and (e) are due to the presence in iron and ammonium citrate of small amounts of free ferric ions and less readily soluble ferrylcitrate salts. The actual form in which the iron is precipitated depends on the particular condition of the aqueous solution. The

1	2	3 -	4	5	6	7	8	9	10	11	12	_ 13
No.	Fe <sub>2</sub> O <sub>3</sub> per cent.	NH <sub>3</sub> per cent.	Citric acid per cent.	FeO per cent.	II  NH <sub>4</sub> per cent.	C <sub>6</sub> H <sub>5</sub> O <sub>7</sub> per cent.	$\begin{array}{c} \text{Molecular} \\ \text{ratio} \\ \text{C}_6\text{H}_5\text{O}_7/\text{NH}_4 \end{array}$	Calcium per cent.	Magnesium sulphate test	Aqueous solution test	Ferro- cyanide	Ammonia and ferro- cyanide
1	31.4	5,2	62.40	28,25	5,51	56.16	0.97	0.047	+	_		
2	30.7	5,5	64.40	27.62	5.82	57.96 -	0.94	none	-	_	_	
3	30.4	5.0	65.8	27.35	5.30	59.22	1.06	0,136		+(e)	+	
4	31,32	4.98	61.43	28.18	5.28	55.29	1.00	0.051	-	+(c)	+	+
5		5.90	64.06	_	6.25	57.63	0.88	none	_			
6	_	5,77	59.74	-	6.11	53.74	0.84	pres.	+	+(b)		
7 ,.	-	5.70	61.39	. —	6.04	55.23	0.87	pres.	+			
8	31.23	7.40	65.13	-	7.83	58.59	0.71	pres.	+	+(b)		<u></u>
9	-	5,44	63.11		5,76	56.78	0.94	none			*+	87.
10	31,32									+(c)	+:	· · · ·
11	30.74									_		
12	30.4									+(d)	+	+
13	30.7										*+	<u> </u>
14	30.83								_			201
15	30.5								_	+(e)	+ ·	
16	31,13								-	+(e)	+	·+*
17	30.95								_	-		
18	36.50					1				-	-	

<sup>\*</sup> Slight coloration only.



simplest type of precipitate (c), consisting mainly of a basic sulphate of iron, was found in two samples of iron and ammonium citrate in which the reaction for sulphates was particularly marked. In these samples it would appear that the free ferric ions already exist in inorganic combination in the salt before it is dissolved in water, i.e., they are acquired as inorganic salts in the process of manufacture, either (1) through the actual formation of basic ferric sulphate during the precipitation of the ferric hydroxide, or (2) through the reaction of the small proportion of ferric ions produced by the dissociation of salts of the ferric citrate type with the sulphates present from incomplete washing of the ferric hydroxide. These

possibilities may be considered in turn.

(1) There is apparently some difficulty in completely the ferric sulphate solution into ferric converting hydroxide when use is made of precipitants other than ammonia. Working on the large scale, ammonia is objectionable and often impracticable, and other alkalis are substituted. A certain amount of difficulty is met with in avoiding the formation of basic compounds of incomplete the complete the compounds of incomplete the compound of incomplete the com iron, which are not decomposed in the subsequent operations and which are liable to remain in the finished product. The author refers to a paper by F. H. Alcock on "Trades Samples of Citrate of Iron and Quinine" ("Y.-B.P.," 1886, 473). Reference to the formation of basic iron compounds is made by Hobart ("P.J.," 1926, I, 478) in an account of one of the methods of preparation of iron and ammonium citrate employed on the commercial scale. "Seda-ash (commercial dried) mercial scale. "... Soda-ash (commercial dried Na<sub>2</sub>CO<sub>3</sub>) in slight excess of the theoretical quantity is dissolved up, avoiding excess of water, either by blowing steam through or by other means. While this solution is still very hot the solution of ferric sulphate is strained into it through a calico bag. At the temperature of the reaction the precipitate of ferric carbonate first obtained breaks down to yield Fe(OH)<sub>3</sub> and CO<sub>2</sub>. The 'mud' thus obtained should be of a very dark chocolate-brown; lighter-coloured muds containing basic carbonate are obtained if excess of alkali has not been used, or if the solutions have been too dilute. These are incompletely soluble in citric acid, and it is a hopeless task to attempt preparation of iron and ammonium citrate from them."
The washing is carried out by decantation, and the "mud" then removed to calico screens and washed with distilled water. "No other method appears to be satisfactory; if a filter-press be used or if the mud be not used within, say, twenty-four hours of precipitation, curious oxyhydrates of iron are formed, which do not completely dissolve in citric acid and are useless for the purpose." It is clear from these abstracts that the proper precipitation of ferric hydroxide is a peculiarly sensitive operation, in which the slightest deviation from a definite routine is likely to bring about untoward

results.

(2) The second possible source of free ferric ions in iron and ammonium citrate is their formation during the evaporation before scaling. Where due attention is not paid to the loss of ammonia during this operation, and where such losses are not regularly made up by further additions, it is possible that the solution may become acid enough to cause breaking down of the complex ferrylcitrate ion to give simple ferric ions, which may, in the presence of much sulphate, either during the evaporation or subsequently, on dissolving the scales in water, react with this sulphate, to be thrown down later as an insoluble basic salt. Where this is the case the formation of free ferric ions may be regarded as permanent, i.e., they cannot be recombined in a simple manner into a complex ion, as in the case of the small proportion of free ferric ions formed by the dissociation of ferric citrate alone in the absence of much sulphate. Ferric citrate may be regarded as ferrylcitric acid.

(a) [HFeCit]  $\rightleftharpoons$  H' + [FeCit]'

( $\beta$ ) [FeCit]'  $\Longrightarrow$  Fe''' + Cit'''

On dissolving in water the salt is broken up to some extent into H ions and complex ferrylcitrate ions, the

latter then partly dissociating into free ferric ions and free citryl ions. The free ferric ions are, of course, capable of reacting with potassium ferrocyanide to give insoluble Prussian blue, and when they are removed in this way the equilibrium is disturbed from left to right with the formation of more free ferric ions, so that eventually all the iron has been converted into the ionic state and precipitated as Prussian blue. On the addition of ammonia, however, to ferric citrate solutions, the equilibrium is driven from right to left and the free ferric ions are recombined into complex ions. Undissociated compounds of the type of true iron and ammonium citrate are formed, solutions of which contain no free ferric ions and do not, therefore, react with potassium ferrocyanide. If, however, the equilibrium is disturbed by the presence of substances such as sulphates, which will hold the free ferric ions and prevent their re-formation into complex ferrylcitrates on the addition of ammonia to the solution, the solutions will continue to react with potassium ferro-cyanide, even after the treatment with ammonia. The two samples giving the basic sulphate precipitate were found to give a strong olive-green coloration with potassium ferrocyanide, which turned to blue on standing for some time. Solutions of these latter samples, however, on the addition of a drop of dilute ammonia to make alkaline, followed by the cautious addition of N/10 hydrochloric acid, drop by drop, just to bare acidity to litmus, gave no coloration or precipitate with potassium ferrocyanide, showing that the free ferric ions had been considered to the constant of the constant recombined into complex ferrylcitrate ions. On the contrary, however, the two samples giving basic sulphate precipitates still gave the reaction with potassium ferrocyanide after treatment with ammonia, showing that the conversion into free ferric ions was permanent. In the absence of sulphates the precipitate takes the form of insoluble ammonium ferrylcitrates. It has already been noted by Todd that those samples in which precipitates most frequently occur are those most acid to litnus, and in which the percentage of ammonia is low. In the author's experience these are the samples in which the precipitates (d) and (e) occur. These precipitates are undoubtedly related, since they have much the same constitution, the characteristic form in which they are deposited depending on the concentration of the solution and probably other factors. The green precipitate (e) contains some ammonia in addition to iron and citric acid; it is slowly soluble in cold water, readily in hot, and the solution is strongly acid to litmus. Further, it is readily soluble in dilute ammonia in the cold, and the solution so obtained, on making barely acid by the cautious addition of N/10 hydrochloric acid, gives no, or only the faintest, coloration with potassium ferrocyanide. It has, therefore, all the characters of an acid ammonium ferrylcitrate, less soluble than iron and ammonium citrate and thrown out of solution by strong solutions of the latter. The flocculent precipitate (d) has a similar composition, but contains, in addition, sulphate, so that it may be the product of a reaction between the acid ferrylcitrate and inorganic ferric ions.

The presence of these acid ferrylcitrates is undoubtedly due to insufficient attention being paid to the maintenance of a proper proportion of ammonia during the evaporation preparatory to scaling. The B.P. is very properly insistent on an excess of ammonia being maintained during the evaporation. The importance of a strict control of temperature during the preparation of iron and ammonium citrate and the deleterious effect produced by too high a temperature during evaporation and scaling have been referred to by Squibb ("J.A.Ph.A.," XXVII. 297). A further factor which may be of importance in connection with the subsequent behaviour of a sample of iron and ammonium citrate, and one which might repay investigation, is the action of light on the salt. The effect of light on organic ferric salts such as the oxalate is, of course, well known. Exposure to light has no visible effect on iron and ammonium citrate itself (it would be difficult to observe any on account of its colour), but green iron and ammonium citrate and iron and quinine citrate both acquire a very distinct brown tint when exposed to light, and ferric citrate becomes less soluble

t (3) Those samples which give precipitates in simple

when kept, which may be due to changes brought about by the action of light. It must be admitted that in the majority of samples of iron and ammonium citrate the proportion of impurities is very small, but it is unfortunately the case that they are of such a nature as sometimes to produce, even when present in small proportions, mixtures with a very unsightly appearance.

Composition of Iron and Ammonium Citrate.—Attention is drawn to the fact that as far as the aqueous solution test is concerned, all except Nos. 3 and 4 of the completely analysed samples are satisfactory. This fact is of importance because of its bearing on the question of the minimum percentage of ammonia proper to a good specimen of iron and ammonium citrate. It will be seen that the two unsatisfactory samples have the lowest percentages of ammonia, and they are, in fact, the two samples in which the molecular proportion of citric acid to ammonia equals or exceeds unity. It would, therefore, appear that while under 5 per cent. of would, therefore, appear that while under 5 per cent. of ammonia (in a sample containing the theoretical 61.5 per cent. of citric acid) is too low for stability, specimens containing very little over 5 per cent. may be perfectly stable. It has been remarked that the actual percentage of citric acid in trade samples of iron and ammonium citrate is usually rather over the 61.5 per cent. calculated from the B.P. process, and an allowance may be made for this fact to prevent undue acidity. The highest percentage of citric acid recorded in the table is 65.8 per cent.; if, therefore, it is assumed that a minimum of 52 per cent. of ammonia (the mean of samples Nos. 1 per cent.; 11, therefore, it is assumed that a minimum of 5.2 per cent. of ammonia (the mean of samples Nos. 1 2 and 9) is necessary for stability in presence of 61.5 per cent of acid, then the minimum for safety becomes  $55.8 \times 5.2 \div 61.5 = 5.56$  per cent., or, in round figures, 5.5 per cent. In the opinion of the author, provided a specimen of iron and ammonium citrate has been carefully approximately approximately  $\frac{1}{5}$ . fully prepared, an ammonia content of 5.5 per cent. is more than sufficient to ensure the stability of the specimen more than sufficient to ensure the stability of the specimen in aqueous solution, and the 6.9 per cent. of ammonia recommended as a minimum by Todd is certainly too high. It would further appear that in certain cases the percentage of citric acid is high at the expense of the iron content. Sample No. 3, which contains 65.8 per cent. of citric acid, yielded only 30.4 per cent. of residue on ignition, and there is thus evidence that saturation of the citric acid has not been carried to completion, and on the case in star samples in which the residue on ignition is slightly under the B.P. minimum of 31 per cent. Sample No. 18 is interesting as containing iron much in excess of the B.P. figure; it contained only traces of sulphates and chlorides, and behaved perfectly in aqueous solution and in magnesium sulphate solution, in aqueous solution and in magnesium sulphate solution, but was not, unfortunately, analysed further. It has been pointed out by Hobart ("P.J.," 1926, 328) that the residue on ignition of iron and ammonium citrate is not a precise measure of the iron content, on account of the presence of water-soluble ash (e.g., sodium sulphate), which is reckoned as Fe<sub>2</sub>O<sub>3</sub>. It is desirable that in the next edition of the British Pharmacopæia the assay process should include washing and reignition of the ferric oxide. In this case it would be well to extend the oxide. In this case, it would be well to extend the limits for ferric oxide a little to allow for this water-soluble ash, as many perfectly satisfactory samples of iron and ammonium citrate which may contain a few tenths of a per cent. of sulphate would have to be rejected if the present lower limit of 31 per cent. were retained. A limit for water-insoluble ash of from 30 to 32 per cent. would be satisfactory in all respects.

### SUMMARY

(1) The precipitate given by some samples of iron and ammonium citrate in solution with magnesium suphate is shown to depend on the presence of calcium in these samples, probably as a result of the use of tap-water instead of distilled water in the process of manufacture.

(2) It is shown that some samples of iron and

(2) It is shown that some samples of iron and ammonium citrate containing calcium give no precipitate when dispensed with magnesium sulphate, and this behaviour is known to be connected with the high proportion of citric acid to ammonia in these samples.

(3) Those samples which give precipitates in simple aqueous solution are shown to contain free ferric ions and to react with potassium ferrocyanide. In some cases, the precipitates are due to ferric iron in organic combination; in others, the iron appears to be in inorganic combination.

(4) In some samples containing a low proportion of ammonia, a comparatively large quantity of acid ammonium ferrylcitrate may be present and be precipitated as a green solid in presence of large concentrations of true iron and ammonium citrate.

(5) Some conditions during manufacture in which free ferric ions and acid ferrylcitrates may be formed are indicated.

(6) It is shown that many perfectly satisfactory specimens of iron and ammonium citrate may contain less than 5.5 per cent. of ammonia, and that the 6.9 per cent. recommended by Todd as a minimum is therefore too high.

(7) It is recommended that the B.P. assay for iron

(7) It is recommended that the B.P. assay for iron should be altered to include washing and reignition of the ash, and that, in this case, the limits for residue on ignition should be 30 to 32 per cent., instead of 31 to 32 per cent., as in the present B.P.

The work for this paper was carried out in the analytical laboratory of James Woolley, Sons & Co., Ltd. The author is indebted to the directors for permission to publish the results, and to Miss R. G. Sharpe for making a large number of the experimental determinations.

### DISCUSSION .

The Chairman welcomed Mr. Ferrey on his first appearance to read a paper at the Conference. Ferri ammon, cit. was a fruitful topic for discussion. Mr. Ferrey had pointed out that precipitation in a mixture by magnesium sulphate consisted of calcium sulphate. He referred to the work of Mr. Todd last year. He (Mr. Bennett) suggested that it was a complex iron precipitate, as it was soluble in water.

Mr. Deane stated that little was known of the chemistry of ferri ammon. cit., and methods of manufacture would probably affect any precipitation. Iron compounds were complicated, and the chemistry of them had not been completely studied. He thought, with the chairman, that the precipitate was an iron precipitate, and he had found that the precipitate was iron and that when washed with distilled water it dissolved. Dr. Passmore had concluded that the precipitate was colloidal ferric hydroxide. He (the speaker) had also found traces of calcium. He was prepared to agree that there was calcium present. In the estimation of iron he preferred the estimation method of the U.S.P., and suggested that the iodine method should be adopted in the B.P.

Dr. Hampshire expressed his appreciation, and asked what became of samples of ferri ammon. cit. which failed to pass the magnesium sulphate test. Was there any way of making presentable mixtures?

Mr. Corfield said that the paper contained useful data. The author was unjustified in his criticism of the paper by Todd. As to the ammonia content, 6.9 per cent. was desirable, but he gave no information that this was justifiable. There was a lot of ferri- ammon, cit. on the market, and the ammonia content varied considerably, and was not to be limited to 6.9 or 7 per cent. Mr. Ferrey did not give figures. What he wanted was the percentage of calcium present in the samples of precipitate. He suggested that in view of the uncertainty. He recommended the examination of more samples of ferri ammon. cit. Another point was that in the quantitative tests of the B.P. instead of the ash content there should be a limit of iron.

Mr. Fouracre said that the standards in the B.P. were only given as ash. He suggested that tests should be made on the solution after it was made, but before it was scealed. Why trouble to scale when tests were performed in solution?

Dr. Linnell thought that the scale preparation was partly colloidal. If the solution was placed in a dialysing shell for twelve hours, a dialysate would be obtained

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He asked if the quantities of calcium sulphate present were of any consequence.

Mr. Bowie suggested that the addition of 5 per cent. of glycerin prevented precipitation.

Mr. Ferrey, in reply, stated that the crystalline deposit was calcium sulphate in every case. A little iron was also present. He had experienced difficulty in washing the precipitates. Since writing the paper, investigation by another worker had shown that the precipitation was due to colloidal ferric hydroxide. He disagreed with due to colloidal ferric hydroxide. He disagreed with that. The iodine estimation was more expensive and less simple than the B.P. method. Ferri ammon. cit. which "did not give the mag. sulph. test" went back to the manufacturer. Referring to Todd's magnesium sulphate test, he had applied it as it appeared in Mr. Todd's paper. The question of the B.P. assay, putting it down as so much ash, was for the B.P. committee, and it could easily be put down as iron. He referred to the difficulty of getting ferric hydroxide into solution in acid. addition of glycerin probably resulted in a colloidal precipitate being present. The question was: did glycerin simply hold the precipitate in suspension or did it prevent it?

The next paper, read by Mr. Evers, was :-

### The Determination of Iodine in Organic Combination, Especially in Thyroid Gland

By WILFRED SMITH

### [ABSTRACT]

THE accurate determination of iodine in organic compounds is a matter of considerable importance. author's object was to find the most rapid and efficient method which would give results accurate within the limit expected of a commercial analysis. The U.S.P. limit expected of a commercial analysis. The U.S.P states that thyroid contains not less than 0.17 per cent and not more than 0.23 per cent. of iodine in thyroid combination, i.e., 0.2 + 0.03 per cent., allowing a 15 per cent. deviation. Several methods were first tried on pulv. thyroid, sice. B.P., but these gave values which were only relative, as the exact iodine content of the thyroid was unknown. An organic material of known iodine content was prepared from iodine-free casein and disodium tetraiodophenolphthalein (C<sub>20</sub>H<sub>8</sub>O<sub>3</sub>I<sub>4</sub>Na<sub>2</sub>). A sample of Merck's salt was obtained, which in theory should contain 58.66 per cent. iodine. The iodine determined by Carius' method was 54.71 per cent. 0.3655 gram of the salt, therefore, was dissolved in alcohol and thoroughly mixed with 99.64 grams of casein and dried. This gave an organic preparation containing 0.2 per cent. of iodine. Hunter's method consists in fusing the substance with Hunter's method consists in fusing the substance with sodium carbonate, potassium carbonate and potassium nitrate to eliminate the organic matter; the melt is dissolved in water and the iodide oxidised to iodate in phosphoric acid solution by a slight excess of sodium hypochlorite solution. The solution is boiled to expel excess chlorine, potassium iodide is added to liberate iodine from the iodate, and the iodine is titrated with N/200 sodium thiosulphate solution. N/200 sodium thiosulphate solution.

 $\mathrm{HIO_3} + 5\mathrm{HI} \Rightarrow 3\mathrm{I_2} + 3\mathrm{H_2O}$ 

This, with very slight modifications, is the method of The U.S.P. X for the assay of iodine in thyroid gland. By using Hunter's method as modified in the U.S.P. consistent and reliable results were obtained, and where the iodine content is fairly high, as in the case of thyroid, the method leaves little to be desired. The faults found with it are loss of iodine on acidifying the solution of carbonates with phosphoric acid, and the introduction of oxychlorine compounds, including chloric acid, by the use of sodium hypochlorite solution. These compounds also liberate iodine from potassium iodide, and are not eliminated by boiling. With due care during neutralisaeliminated by boiling. With due care during neutralisation the first-mentioned source of error can be minimised, and where a fair proportion of iodine is present error due to oxychlorine compounds is negligible. Hunter's method gave the following figures:—(1) 0.205 per cent.; (2) 0.213 per cent.; (3) 0.207 per cent.

The author suggests that the removal of chlorine by boiling after acidification be controlled by starch-iodide paper until no reaction is obtained and the solution then boiled for a further fifteen minutes, instead of boiling for thirty minutes as directed. The method entails no constant supervision. Where the iodine content is considerably less than 0.2 per cent., a modification of Kendall's method is the best. A mixture was prepared containing 0.02 per cent. iodine in organic combination by diluting the previous preparation ten times with iodine-free casein. One gram of the substance is gently heated with powdered caustic soda in a nickel crucible over an Argand burner. The crucible is heated more strongly until all the organic matter is oxidised, but no nitrate is added. The melt is extracted with water and bromphenol-blue as indicator, the mixture is neutralised with syrupy phosphoric acid (s.g. 1.75). Excess bromine water is added, and an excess of 2 c.c. phosphoric acid. The liquid is boiled to half its volume to expel bromine, the remaining traces being eliminated by adding salicylic acid after cooling. The iodine is liberated from the iodate by the addition of potassium iodide solution and the iodine titrated with N/200 thiosulphate solution. Results obtained were 0.0196 per cent. and 0.02 per cent. iodine. The author concludes that Hunter's original method is preferred when the iodine content is high (0.2 per cent.) and where ordinary accuracy and speed are required; but a modification of Kendall's method for less amounts of iodine. Acknowledgment is made to Allen & Hanburys, Ltd., and to Mr. Norman Evers.

There was no formal discussion, but the Chairman said

that there was little inclination in this country to adopt thyroxin—the specific hormone of thyroid gland—in place of thryroideum siccum. He suggested that a method of standardisation should be introduced in the Pharma-copeia if thyroid, sicc. was to be retained. The methods of fusion affecting the results obtained and methods of oxidation required careful study.

The last paper taken at this session, read in abstract by Mr. Evers, was :-

### The Melting Point of Cocaine Hydrochloride

By WILFRED SMITH

### [ABSTRACT]

The following melting points are given:—B.P., 1914, 182°-186° C.; U.S.P., X, not below 183° C.; D.A.B., VI, not below 182° C.; French Codex, 1908, 186° C.; Allen's "Commercial Organic Analysis," Vol. VI (4th ed.), 189.9° C.; "Plant Products" (Henry), 200°-202° C.; "International Critical Tables," 187° C. Thorpe's "Dictionary of Applied Chemistry" states that the melting point of cocaine hydrochloride varies with the rate of heating, and that when introduced into a bath previously heating, and that when introduced into a bath previously heated to 195° C. and the temperature slowly raised, the melting point of the salt is 201°-202° C. Of fifty samples metting point of the sait is 201°-202° C. Of fifty samples examined, in three cases only was the melting point below 186° C. Usually it has been between 194° C. and 197° C. In each case the melting point was taken by the B.P. method and the uncorrected figure recorded. In order to ascertain if any variation of the melting point could be attributed to different processes of manufacture three pure samples were obtained from different facture, three pure samples were obtained from different drug houses and examined. Each gave Maclagan's test leaving the supernatant liquid perfectly clear; each gave the characteristic permanganate plates without any sign of reduction; and each had a specific optical rotation at 15.5° C. in aqueous solution 70.35° C. The B.P. directs that the melting point of a substance shall be taken by introducing a small quantity in a tube into a bath previously heated to 5° C. below the expected melting point, and warming gently. In the case of cocaine hydrochloride, if the expected melting point is 20°-180° C. (B.P.), the sample must be introduced into a bath previously heated to 177°-181° C. The melting points of the samples by this method were 193.0° C., 193.5° C., and 193.0° C. When the samples were inserted into a bath previously heated to 195° C, the melting points were 198.0° C., 198.5° C., and 198.0° C. When inserted into a

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tobacco-tannin (so-called),

cold bath and the temperature gradually raised the melting points were 188.0° C., 188.5° C., and 188.0° C. respectively. While the melting point of cocaine hydrochloride varies with the rate of heating, the melting point as given in the various pharmacopæias is too low for the salt as prepared at the present time. The author suggests that the melting voirt he taken by introducing gests that the melting point be taken by introducing the salt into a bath previously heated to 195° C. when the melting point shall not be below 197° C. Acknowledgment is made to Allen & Hanburys, Ltd.

### DISCUSSION

The CHAIRMAN said that this note should not be overlooked when the monograph was revised in the next Pharmacopeia. There was not the least difficulty in obtaining in the market a cocaine hydrochloride of great

purity.

Dr. Linnell pointed out that the point to be emphasised was that the substance was not stable at the temperature at which the melting point was to be determined. A general rule would be to specify the absolute conditions at which the melting point was to be obtained. He suggested that the melting point should be determined in a sealed tube.

This closed the proceeding of the session.

### Science Section—Wednesday Afternoon

A fairly good number of members gathered in front of the chairman's platform on Wednesday afternoon. The first paper taken was :--

### The Use of Iron Reagents in the Detection and Differentiation of Phenols

By ALAN H. WARE [ABSTRACT]

THE use of iron reagents in the detection and differentiation of phenols is arranged under the following primary heads:—The general character of the reactions given; practical methods of testing, with specific results.

### I-GENERAL CHARACTER OF REACTIONS GIVEN

Most phenols which are soluble in water or alcohol give characteristic colour reactions with iron reagents. With respect to the nature of these colour reactions, and of the coloured bodies produced, three classes of phenols

may be differentiated.

CLASS A.—Each phenol usually gives only one distinct and definite colour reaction with ferric salts. No characteristic colour is given to ferrous salts, even on the addition of alkali. With ferric salts the range of PH through which the colour is given is usually very small, and in any case the colour is particularly unstable in alkali. The coloured compounds produced with this class of phenol are not readily precipitated, and are, probably, simple ferric phenates.

Blue or Green.—Guaiacol, thymol, eugenol, morphine, cephæline, hydroquinol (transient colours only) and

Violet or Purple.—Carbolic acid, the cresols, salicylic acid and other salicyl-phenols, resorcinol, orcinol and phloroglucinol.

Miscellaneous.-Phloridzin gives a red and aroma-

dendrin a purplish-brown.

dendrin a purplish-brown.

CLASS B.—Individuals of a certain group of phenols possessing two or more hydroxyl groups in contiguity give, with ferric chloride, a coloured admixture which becomes modified in the direction of an intense violet or purple on the careful addition of alkali. These changes are determined by the hydrogen-ion concentration, and a series of five colours may be obtained. These are green, blue, violet, purple and red, or in the reverse order, according to the direction in which the PH is changing (continuously). The following important phenols belong to this class, and are listed under the colours which they to this class, and are listed under the colours which they give to the ordinary method of applying the ferric chloride test, viz. :

Green.—Pyrocatechinol (catechol), protocatechuic acid, the catechinols (catechins), chlorogenic acid (caffetannic acid), ipecacuanhic acid, tadrenalin and catechol tannins.

Blue, Violet or Purple.—Gallic acid, pyrogallol-tamins, and cyanidin and delphinidin anthocyans.

Transient Colours, successively, but finally a red or a brown.—Pyrogallol, brazilin and hæmatoxylin.

CLASS C.—Pyrone and quinonoid phenols and some benzo-phenone phenols. Ferrous salts give with these, on the addition of a little weak alkali, an intense brown colouration. Ferric salts, without added acid or alkali, give a green or brown colour reaction. Neither ferric nor terrous salts give a blue, violet or purple with any variations of Ph or other conditions. This is true even when the complex molecule contains a catechol or pyrogallol grouping. Some of the more important phenols belonging to this class are:—Maclurin, aloin, and other emodin bedies and way ways if not all embeaties and ways are if not all embeaties. bodies, and very many, if not all, anthoxanthins, amongst them the flavone luteolin and the flavones morin, quercetin, quercetrin, rutin, myricetin and myricetrin. Of these, aloin and other emodin bodies and myricetin (but not myricetrin) give a brown colour to ferric chloride alone; the rest give a green.

### IL-PRACTICAL METHODS OF TESTING

It is best to use ferric chloride with increasing positive PH, and Mitchell's reagent with decreasing positive PH. Distilled water should be used in all cases. If the substance to be tested is mixture, shake out the phenol from the watery admixture with a suitable organic solvent.

(1) The Use of Ferrous Salts, Mitchell's Reagent.—In 1923 Mitchell introduced his ferrous tartrate reagent, which possesses advantages over ordinary ferrous salts which possesses advantages over ordinary regions are in that, inter alia:—The hydrogen ion concentration is very near Pn7; very little ferric iron is present; with appropriate adjustment of PH a maximum intensity of violet colour can be obtained with phenols of Class B, and of brown colour with those of Class C. The reagent

and of brown colour with those of Class C. The reagent is made by dissolving 0.1 gm. of ferrous sulphate and 0.5 gm. of Rochelle salt in 100 c.c. of water.

Method of Testing and Results.—The reagent is added to the solution of the phenol until no further darkening of colour occurs. The PH is then adjusted with very dilute aqueous animonia, or sodium bicarbonate, until the desired result is obtained, or until it is evident that no characteristic colour reaction is to be given. If a negative result be obtained, the phenol is provisionally assigned to Class A; a violet colour indicates, probably, a phenol of Class B, and a deep brown colour probably a phenol of Class C. Potassium acetate is now added, and the mixture boiled. All tannings are readily precipitated, the of Class C. Potassium acetate is now added, and the mixture boiled. All tannings are readily precipitated, the precipitate in the absence of interfering bodies being violet or purple. Hæmatoxylin is partially precipitated (blue), and maclurin and many anthoxanthins may be precipitated (often incompletely) as deep brown complexes (some phlobaphenes also come down as brown precipitants). No other phenols appear to be precipitated.

(2) Note on the Use of Ferric Chloride.—Various investigators have precommended that iron alum or ferric

investigators have recommended that iron alum or ferric acetate be substituted for ferric chloride. This is only advantageous when a separate test with ferrous salt is not carried out. Neither iron alum nor ferric acetate gives the requisite PH to yield certain distinctive results, and it is therefore much better to use both the tests

described in the manner already recommended.

Method for Ferric Chloride Test.—A 1-per-cent. solution of neutral (so-called) ferric chloride is used, and added drop by drop to the solution of the phenol, which should be at first in excess. Subsequently the ferric chloride may be added in excess or dilute acetic acid

may be added.

Results.—The following are results additional to those under classes A, B and C. Some phenols which give a blue or violet colour reaction, when the phenol is in excess, will give a change of colour to a green on sufficient addition of the reagent, or on addition of sufficient dilute cattle acid and by the page of colour to a green or graphic acid and carting acetic acid, drop by drop, e.g., gallic acid and certain ellagitannin and phlobatannin bodies. The especial ten-dency of typical pyrogallol-tannins to give a blackish precipitate is well known. The relatively strongly marked

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persistence of the colour-reaction given by salicyl-phenols in the presence of dilute acetic acid is worth noting.

IV.—New and Improved Precipitation Test for Certain Phenols

Method.—The iron reagent used may be either Mitchell's ferrous tartrate solution or a solution of the citrate of iron and ammonia of the B.P. (0.25 gm. in 100 c.c. of distilled water), the subsidiary reagents are Rochelle salt; solution of ammonia, 10 per cent., aq.; acetic acid, 33 per cent.; and solution of formaldehyde, 35-40 per cent.

1 - 1		
Successive steps of the test	Result given	Probable or possible significance of the result
ITo 6 c.c. of the solu- tion or extractive add 1 drop of the acetic acid and 1 gm. of Rochelle salt. Warm and filter. Reserve filtrate or solution for the second step.	Coloured residue soluble in warm solution of sodium sulphite to give a coloured solution.	Precipitate probably consists of phloba- phene previously in colloidal solution.
II.—To filtrate or solution add iron reagent until no further darkening, or if this does not occur, add 5-6 c.c. Boil. Filter, if necessary. (See under III for precaution).	Blackish, violet or purple ppt. insoluble in al- cohol or alkalî.	Result specific for typical pyrrogallottan- nins (i.e., gallotannins, ellagitannins, hama- melitannin and other non-phlobaphene pro- ducing tannins).
all.—To the filtrate or solution add 1 c.c. of acetic acid, boil, and to the boiling hot liquid add ammonia drop by drop until smell of ammonia is noted. Filterin necessary. At the end of each step, except the first, it is best to add more iron reagent, and again boil to ensure complete precipitation.	Blue ppt. with violet filtrate. Violet or purple ppt.  Brown ppt.	Hæmatoxylin,  Phlobatannin (or a little tannin not quite completely precipitated at Step II).  Flavone or flavanol or possibly maclurin. Whatever the colour of the ppt., any of the bodies named may be present. Phlobatannins always precipitated at this step. Hæmatoxylin always partially precipitated.
*IV.—To the filtrate or at solution from Step III add acetic acid drop by drop until there is no smell of ammonia. Next add 3 drops of formaldehyde solution and boil. If no ppt. falls, add acetic acid, if necessary, up to 10 drops, to the boilinghot solution. Filter if necessary.	Blackish, violet or purple ppt. Brown (deep) ppt.	Pyrogallol, pyrocate- chinol or the cate- chinols, Gallic acid or brazilin occasionally. Flavones, flavonols or maclurin.
V.—Once again boil the fittrate or solution and add ammonia drop by drop until either a ppt. or a distinctly coloured solution is given.	Deeply coloured ppt. given.  Violet, purple or ruby red solution left.  Deep brown solution left.	The following may be precipitated: machirin or the anthoxanthins, residual hæmatoxylin, and possibly gallic acid or brazilin.  It sufficient iron reagent has been used, this may be due to other phenois of Class B. Due to any phenoi of Class C, but aloin, in particular, should be looked for, and also other emodin bodies.

III-SPECIAL TESTS WITH IRON SALTS AND HYDROGEN PEROXIDE

These fall into two classes:—(a) A test for a number of phenols in which ferrous sulphate, hydrogen, peroxide and sodium sulphite are used; (b) a test for isobarbaloin in which ferric chloride and the peroxide are employed.

(a) Special Test with Ferrous Sulphate and Hydrogen Peroxide.—When certain phenols are treated under the requisite conditions with hydrogen peroxide the molecules acquire an additional OH group. In many cases this reaction affords a confirmatory test reaction affords a confirmatory test.

Method of Testing.—One or two drops of a liquid

phenol or a small quantity of solid is dissolved in 5-10 c.c.

of water together with a little ferrous sulphate. drop of 10 vol. hydrogen peroxide solution is then added and the mixture shaken until a marked degree of green, red or brown colour is given. The mixture is shaken with from 0.2-0.5 gm. of sodium sulphite.

Name of phenol	Result before adding sodium sulphite	Result after adding the sulphite
Carbolic acid, the cresols (including B.P. cresol) Gualacol and B.P. cresoly of the Salicylic acid and other salicyl bodies Thymol and eugenol (in alcoholic sol.)	Deep green Brownish green Purple Nil distinctive Reddish colour	Blue, violet or purple  """  Brown  Nil distinctive  Blue, violet or purple
Resorcinol and orcinol Phloroglucinol	Brown Yellow, greenish or brown Brown or reddish	Brown or yellow "Brown

(b) Special Test for Isobarbaloin.—Aloin, obtained from so-called Barbados aloes, or aloes itself is dissolved in from 5-10 c.c. of water. One drop of hydrogen peroxide is added and the mixture shaken. Finally aqueous ferric chloride, 1 per cent., is added drop by drop, shaking between each addition. The following colours appear in succession:—Green, brown, ruby-red and lastly reddish-purple. Too much ferric chloride must not be added, either at one time or in all, or the results given are less characteristic. The result is not given by either Socotrine or Zanzibar aloes.

### DISCUSSION

Mr. Corfield pointed out that many of these phenols" are very complex substances. Many disin-"phenols" are very complex substances. fectants contain mixtures of phenols, dihydric, trihydric, and so forth. Was there any qualitative test to distinguish between cresols, xylols and other similar bodies? He thought that thymol did not give a blue or green

colour with ferric chloride.

Mr. J. R. Hill inquired whether it was justifiable for a manufacturer to label a preparation "free from carbolic acid" when there were homologues of carbolic acid present.

Mr. Ware, in reply, said he used the term "phenols" in a general sense, including all bodies which give a phenolic reaction. Though it was almost impossible to distinguish, with ordinary tests, between carbolic acid and cresols, he himself had published specific tests last year. Thymol gave an evanescent green with ferric chloride. He hoped to be able to identify vegetable extractives on the lines of the phenols present.

The CHAIRMAN conveyed to the author the thanks of those present.

The next paper, read by Mr. Ferrey, in the absence of the author, was :-

### Apiol

### By J. R. WALMSLEY, [ABSTRACT]

THERE is some demand for "apiol," or "liquid apiol," and some confusion exists as to the characters of the drug which should be supplied under that name. The B.P.C. monograph describes apiol (synonym, liquid apiol) as a green oily liquid of s.g. 1.095 to 1.107 obtained from Carum petroselinum (Bentham and Hooker), freely soluble in alcohol, ether, acetone, glacial acetic acid and benzene. At the end of the monograph, a reference is made to oleoresina petroselini U.S.P., which is described as being obtained from Petroselinum sativum (Hoffas being obtained from Petroselinum sativum (Hoffman). The two botanical names refer to the same plant, so that, both being ethereal extracts, one might regard the B.P.C. preparation and the U.S.P. preparation as being identical, and the reference as superfluous. It is found that a preparation answering to the B.P.C. de-scription is practically unobtainable commercially, and that the ether extraction of parsley fruits does not yield a drug to which the name apiol could be rightly applied.

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The chemical substance apiol (sometimes spelt apiole) is a phenol-ether, occurring in colourless crystals melting at 30° C. and having s.g. 1.179. Its formula:—

(CH2O2) (CH3O)2.C6H. CH2.CH: CH2

shows it to be an allyl-dimethoxy-methylenedioxy-benzene, which is a methoxy derivative of myristicin. This, in turn, is the methoxy derivative of safrol, the chief constituent of oil of sassafras, and all are closely related to eugenol, which forms the bulk of oil of cloves. Isomers of all the above also occur, there being no less than four of the first, and a common property of all is to cause the essential oils containing them to have a high specific gravity. The author gives a résumé of properties and

source according to various works of reference.

On extracting some freshly crushed dried English-grown parsley fruits with ether, it was found that they yielded 23.5 per cent. of a thick green oil which had s.g. 0.9355 and saponification value 162.6, corresponding to about 85 per cent. of glycerides. The acid value was 9.1, showing that some free acid exists in the seeds. Extraction with chloroform, petroleum ether, benzene, carbon disulphide and acetone gave very similar products with yields from 21 to 25.5 per cent. so that it may be with yields from 21 to 25.5 per cent, so that it may be concluded that extraction with any of the usual solvents yields extracts which are mainly fatty oils. To eliminate the fatty oil, a quantity of the fruits was mixed with milk of lime and allowed to stand for twenty-four hours, when it was expected that the fatty oils would be converted into insoluble lime soaps, and the mass was then partially dried. Too long action of the alkali was to be avoided, as this tends to isomerise the phenol ethers. On extraction with ether it yielded 18.1 per cent. of a thick green oil, which had a saponification value of 159.6, corresponding to about 83 per cent, of glycerides. The acid value was lowered to 1.8, but little of the glyceride was saponified under these conditions. A further quantity was extraoted by slow percolation with 90-per-cent. alcohol in the hope that a minimum of fat would accompany the phenolic ethers. When two volumes of percotate had been collected from one part of fruits the alcohol was distilled off, when 8.78 per cent. of a solid brownish green fat, which melted at about 25°C., was obtained. This had s.g. 1.0305, saponification value 81.75 and acid value 18, corresponding to 42.5 per cent of glycerides, including about 9 per cent of free fatty acid. It is interesting to note that a quantity of fine white crystals separated from the percolate and on examination proved to be a pure fatty acid; on evaporation a granular substance separated, which was insoluble in water, alcohol and ether, and appeared to be of a pectic nature. Apart from this, the product was completely soluble in 90 per cent. alcohol, and as its s.g. is high and it contains much less fat than the ether extract, alcohol appears to be preferable to ether as a solvent, and its use will be further investigated.

The average s.g. of numerous samples from various makers has been found to be 0.9425, the highest being 0.9458 and the lowest 0.9337. All these were only slightly soluble in 90 per cent. alcohol. Several years ago two samples from British makers were found to have s.g. 0.895 and 1.039 respectively, and to be soluble in alcohol with not more than an opalescence, but these must be regarded as exceptional lots. Two samples which have been examined more fully are typical of present supplies. "A" is the product of a first-class English house and is labelled "Oleo-resina Petroselini, Liquid Apiol U.S.P. IX." It also bears a notice that, owing to the large amount of apiol in this preparation, the container should be warmed to melt the crystalline deposit. When the figures given below are examined, it will be seen that this statement is rather misleading. Sample "B" is the product of a well-known New York manufacturer, and is labelled "Liquid Green Apiol." Both are very similar as regards odour, appearance, specific gravity and con-gealing point. The constants for the acid and ester values are in close agreement, but it was noticed that the soap produced on saponification was much more viscid in the

case of the English make.

	A. (English)	B. (American)
S.G. at 15.5°C Liquid portion poured off	0.9425	0.9423
when about 75 per cent. had solidified had S.G.	0.9471	0.9507
Soluble in 90 per cent.	1	
alcohol Soluble glacial acetic acid	Slightly Partially	Slightly Partially
Soluble ether, benzene ace-		
tone, etc.	Completely 17.4	Completely 14.8
Ester value	143.5	147.1
Saponification value Unsaponifiable matter	160.9 14.11 per cent.	161.9 13.17 per cent.
Insoluble fatty acids	77.10 ,, ,,	74.37 ,,
M.P. of fatty acids in bulk	∫ 21°C. \	∫ 24°C.
,, in cap tube	₹25.5°C. }	₹27.5°C.
Acid value of fatty acids Mean equivalent weight	194.6	196.1
acids	289.4	286.0
Iodine value (Wij's) acids Saturated fatty acids	97.4 47.5 per cent.	96.6 63.5 per cent.
Unsaturated fatty acids	52.4 ,, ,,	36.5 ,, ,,

Both were semi-solid at 15.5° C., completely solidified at 10° C., and remelted to dark-green oily liquids below 20° C. The fatty acids, which retained the green colour, were separated in the usual manner after removal of the unsaponifiable matter, and their proportion indicates that some 82 per cent. of glycerides is present in each sample. The mean molecular weight of these fatty acids and their iodine value suggested a high proportion of oleic acid and approximated closely to the mixed fatty acids from olive oil, but their melting point was so much higher and they were so solid and crystalline that a further separation was called for. The mixed fatty acids were therefore separated by means of their lead salts, the saturated acids being in much greater proportion in the American sample, but in each case they were hard and distinctly crystalline, melting about 27° C., whilst the unsaturated acids were semi-solid and melted about 20° C., but on standing they, too, became crystalline. The unsaponifiable matter was a thick, yellow oil with the strong characteristic odour of the oleo-resin, and on standing deposited some crystals, but too small in amount for further separation.

A search in the literature for a fatty acid having the properties given above established the fact that a large proportion of petroselinic acid (\$\Delta\$ 6:7 octodecenoic acid), an isomer of oleic acid, of m.p. 30° C. was present, and it also brought forward some important work by Hilditch it also brought forward some important work by Hilditch and Jones) which confirms the composition of oleo-resina petroselini given above. These workers extracted the fruits of *Petroselinum sativum* with ether and obtained 25 per cent, of an oil which contained 18 per cent, of non-fatty matter. The fatty acids, which had iodine value 96.2 and saponification equivalent 282.1, contained 76 per cent, of petroselinic acid and 15 per cent, oleic acid. The non-fatty matter was investigated, and yielded 70 per cent, of phenolic others 60 per cent, at least being acid. The non-tatty matter was investigated, and yielded 70 per cent. of phenolic ethers, 60 per cent. at least being myristicin. In the other 10 per cent., apiol was not detected. The composition of the ethereal extract of parsley fruits was, therefore, approximately glycerides 82 per cent., myristicin 10.8 per cent. at least, other phenol ethers (including apiol?) 1.8 per cent., hydrocarbons and non-volatile matter 5.4 per cent. English and French-grown parsley seed contains myristicin and not apiol while the German contains apiol. The author apiol, while the German contains apiol. The author thanks James Woolley, Sons & Co., Ltd., for permission to use the above figures, which were obtained in their works laboratory.

### DISCUSSION

The CHAIRMAN, in opening the discussion, pointed out that commercial apiol was an unsatisfactory product.

Mr. Deane agreed with the author that the British

Pharmaceutical Codex monograph needed re-writing. Ho himself had never been able to make an apiol of B.P.C. specific gravity, but one was made in Germany—he did not know how. Commercial parsley seed varied very much: the English seed was of no use for making apiol. It was a counsel of perfection to suggest the abolition of

the term "apiol." The majority of people were not willing to pay the price of an apiol heavier than water.

Mr. FOURACRE praised the author's list of constants,

and suggested the addition to them of the refractive

Dr. Crossley Holland regarded the paper as a valuable contribution. At one time apiol was in considerable use, but latterly it had been of disappointing activity, with the natural result of decreasing demand. As was the case with several Pharmacopæia products, there was no means of standardising it.

Mr. Διοοςκ thought that investigation should begin

with the seed itself. It had been difficult in the past to

say definitely that a given substance was apiol.

Mr. Brewis remarked that he had seen samples of crystalline apiol and samples of sherry-coloured liquid apiol, and asked about their identity. Apiol for dill

was a misnomer; it was a distinctly poisonous substance.

Mr. Ferrey undertook to bring these observations to the notice of the author, and the CHAIRMAN expressed the thanks of the meeting to author and reader.

The next paper was :-

### Infusion of Senega

By J. F. LIVERSEEGE

[ABSTRACT]

In May of this year copies of a prescription ordering 40 grs. of ammonium carbonate in 8 oz. of infusion of senega were taken to twelve Birmingham pharmacies. Analytical results obtained indicated that the total solids, excluding those containing glycerin, varied from 0.40 to 1.36 w/v. It was ascertained that the presence of ammonium carbonate did not interfere with the determination of the senega solids. After dilution with 9 volumes of distilled water and examination in a thickness of 2 inches, the colours varied from 2.8 to 12.5 Levibond tintometer yellow units and from 0.6 to 2.4 red units, the isolate correlations of the colours of the colou the paler samples containing the smaller amounts of solids. (The author has tabulated these results.)
The estrength of the infusions of senega has remained constant through the British Pharmacopæias as 1 in 20. Samples of senega root were obtained from various sources and infusions made from each. They are arranged in order of the amount of total solids from the infusion.

Roots					B.P. INFUSIONS			
No.	Quality	Ash, per cent.		Total solids	Ash	Colour of 2" 1—10 made alkaline		
110.	No Quarty	Total	Sol. HCl	Insol. HCl	w/v	w/v	Yellow	Red
1 2 3 4 5 6 7 8 9 10	*Good Poor Poor Poor Good Poor Good Good Medium Medium Poor Good	3.82 4.25 2.65 3.90 5.16 2.90 3.55 4.48 3.35 3.94 4.05 4.10	2.49 1.95 2.00 1.95 2.67 1.95 2.15 2.43 1.95 2.23 2.00 1.95	1.33 2.30 0.65 1.95 2.49 0.95 1.40 2.05 1.30 1.71 2.05 2.15	0.94 1.14 1.15 1.22 1.24 1.32 1.34 1.37 1.45 1.45 1.30	0.06 0.06 0.06 0.07 0.08 0.08 0.08 0.08 0.08 0.08 0.08	16.0 13.0 14.0 13.5 16.0 15.0 14.0 14.0 15.8	1.4 1.2 0.8 0.9 1.4 1.2 1.4 0.8 1.0

\* At least forty years old.

Nos. 2 and 7, and possibly 8, were obtained from the Nos. 2 and 7, and possibly 8, were obtained from the same London broker, and the author was informed that the the Western '' variety is the only commercial type used in this country. The amount of total ash in the roots varied from 2.9 per cent. to 4.25 per cent., previous recorded results varying from 2.59 per cent. to 5.05 per cent. The amount of ash insoluble in HCl varied from 0.65 per cent. to 2.49 per cent. In eight of the twelves amples the amount of ash soluble in HCl only varied from 1.59 per cent. to 2.15 per cent. the largest amount being 2.67 per cent. The sample of root that was forty years old gave the lowest amount of solids (0.94 w/v) in the infusions, which suggests that by keeping the amount the infusions, which suggests that by keeping the amount of soluble matter will decrease. The largest amount of solids (1.78 w/v) was obtained from a sample of last

year's root imported direct from New York by the wholesale house. The above results indicate that the B.P. infusion of senega should contain at least 1.2 w/v of total solids. The ash of the infusions only varied from 0.06 w/v to 0.08 w/v. There was little variation in the colour of the infusions after dilution (1-10) and making alkaline. The yellow only varied from 13.0 to 16.0 and the red from 0.08 to 1.4. The acidity of some of the infusions was found to be equal to about 1 c.c. decinormal acid per 100 c.c. On distillation with soda some ammonia was yielded, the largest amount being 0.01 per cent. An experiment was made as to the variation of solids yielded by different parts of the same sample. A root was powdered and the bark containing some wood separated from the white fibrous wood, which was about one-third of the sample. The infusion made from the former contained 1.3 w/v parts of solids and the latter 0.8 w/v. The difference between the two parts would, no doubt, have been greater with more complete separation of the two constituents. In dispensing practice it is now very unusual to prepare a fresh infusion. The following are analyses of concentrated infusion of senega as supplied by ten or eleven wholesale houses. Nos. 7, 8, and perhaps 5, are from one source.

No.	S. g.	Total solids w/v	Alcohol v/v	Suspended solids w/v	Ash w/v	Acidity Nv/v	Alkalinity Nv/v	NH <sub>3</sub> w/v	Colour 1 in made al Yellow	81
1*	0.990	2.9	17 14	0.14	$0.20 \\ 0.16$	1.9		0.03	3.5 13.0	0.2
2	1.000	7.3	23	_	0.14	1.0	_	0.10	13.0	2.5
4	1.010	8.0	16	—	0.38	_	0.6	0.10	12.0	1.4
5	1.000	8.0	- 23	0.59	0.30	1.8	<i>-</i>	0.08	10.8	1.0
6	1.010	8.7	18	_	0.50	9.6		0.13	12.0	1.0
7	1.009	9.5	22	-	036	1.2	-	0.10	12.0	1.6
8	1.008	9.7	24	0.04	0.38	0.4	_ :	0.10	10.0	0.8
9	1.016		19		0.48		1.0	0.15	13.0	2.4
9	1.016	10.5	19	_	0.44		0.6	0.15	13.0	2.5
11†	1.069			_	0.42	0.2	-	0.08	13.0	1.0
12;	1.077	25.6	-		.0.32	-	0.8	0.11	10.0	1.0

\* Chloroform present.

† Glycerin present.

The last two samples contained a notable amount of glycerin. In the other samples the total solids varied from 2.9 w/v to 10.5 w/v. It was found that 1 w/v of solid matter corresponded to an increase of 0.0037 in the s.g., and by the application of this factor to the s.g. of the infusions the amount of alcohol was approximately determined. It varied from 14 v/v to 23 v/v. red and four were alkaline. As a rule the liquids were not far from neutrality, but No. 6 had an acidity equal to 9.6 c.c. of normal acid per 100 c.c. All the samples yielded ammonia on distillation with soda, but in each case the quantity was small. With the exception of one sample the colour of two inches only varied from 10 to 13 yellow units when made alkaline and examined in a dilution of 1 in 81. There was a decided difference in

Three suggestions may be made to explain the large variation in solid matter:—(1) that it is due to variation in senega root; (2) that it is due to decomposition; and (3) that the process of manufacture may be faulty. Examination of the figures given shows that the first explanation is inadequate. With regard to decomposition, Nos. 2 (2.9 w/v), 9 and 10 (10.5 w/v) were examined within a few days of being sent out by the wholesale house; No. 8 (9.7 w/v) within about three months; and the other samples for unknown and probably considerably longer periods. Though No. 5 appeared to contain a considerable amount of deposit, the insoluble matter only amounted to 0.59 w/v. Two other samples were turbid with 0.13 w/v and 0.04 w/v; the remaining samples were clear. These results do not give much support to the suggestion that large variations are due to decomposition. It appears that the chief cause of the new solid matter is an unsatisfactory method of manufacture. When on addition of spirit, or on keeping, deposit is formed, there is a tendency to describe the (3) that the process of manufacture may be faulty. deposit is formed, there is a tendency to describe the deposit as "inert matter." That is a convenient doctrine, but is unsupported by actual proof, and this

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lack of uniformity in the ordinary commercial preparation is unsatisfactory. Spirit, glycerin, ammonia and chloroform are used, and it cannot be maintained that each of the concentrated infusions examined will yield each of the concentrated infusions examined will yield on dilution a product closely resembling the B.P. infusion of senega. The 1898 B.P. gives a formula for concentrated infusion of senega ten times the strength of the ordinary infusion, but this and other similar preparations were omitted in the 1914 B.P. The B.P.C. gives a formula containing ammonia, spirit, oil of gaultheria and chloroform which is the usual 1-8 strength but I am informed by the wholesale houses that strength, but I am informed by the wholesale houses that there is little or no demand for this preparation. The neglect of it may not be due to inferiority, but that it has never been given a fair trial. Some makers consider its use inadvisable, as it contains additions not authorised by the B.P. As concentrated infusions are so largely used as to have almost displaced the fresh infusion, it seems very desirable that the new Pharmacopæia should include a 1-8 concentrated infusion, and that characters and tests should be given. It does not appear that there will be any difficulty in obtaining at least 10 w/v of solid matter in it. Such a preparation might be given as "Infusum Senegæ" and not as "Liq. Senegæ Concent." as in the 1898 B.P., with directions to dilute as required, and the name of the present preparation altered to "Infusum Senegæ Recens." Official methods are desirable for cencentrated infusions of other drugs.

The author acknowledges obligation to a number of wholesale houses for information and for samples of senega root, to Mr. F. H. Alcock, F.I.C., for grading the samples of senega roots and for the old sample, and to Miss E. M. Milward, B.Sc., for the greater part

of the analytical work.

### DISCUSSION

The Chairman pointed out that this was a subject of immense interest to every dispensing pharmacist. It was true but regrettable that fresh infusions had practically gone out. He imagined that there was more variation in concentrated infusion of senega than in any other concentrated infusion. Mr. Bennett agreed with the author's suggested percentage of total solids. He know however of one again, which a colution with this

knew, however, of one case in which a solution with this percentage had been returned. (Laughter.)

Mr. Alcock praised his fellow-citizen as a public analyst who held the scales level, but was not, like Justice, blind. Some of the samples of senega referred to varied enormously. United action was needed to get a standard formula; patients naturally complained when senega mixtures differed. The cortical portion of senega was apt to contract; and if the central portion was excessive the contractive would not be contracted. sive, the extractive would not be good. It would be better if the Pharmacopæia laid down how much of the tuberosity and how much of the root should be Various foreign drugs had been inferior of late years. On one occasion, when he was in the wholesale, a returned sample of the concentrated infusion was treated with saccharum usum and approved afterwards. (Laughter.) He was surprised that the Pharmacopæia did not use Fehling's solution more than it did.

Mr. WARE inquired whether a depositing infusion should

be shaken before dispensing it.

Mr. J. R. Hill remarked that two samples from the same consignment might give different results; the root needed thoroughly breaking and mixing. Did we want the saponin in senega preparations? Even in the tincture the saponin became hydrolised. The name "liquor" in the Pharmacopæia did not denote an infusion. Would "recens," the word suggested by Mr. Liverseege, be noticed by account discount. noticed by every dispenser?

Mr. Cripps did not quite agree with the author that a fresh infusion should be named "recens," and a concentrated preparation "infusion"; he thought that the nomenclature would cause endless confusion. It was better to have the concentrated preparation under such a title as "concentrated infusion." It was wrong to suppose that if a concentrated preparation kept fairly well it was a good infusion. We should not trust to

a percentage of solids, but the amount of undecomposed saponin should also be determined.

Mr. Evers remarked that the deposit was the hydro-

lised product of saponin.

Mr. DEANE suggested that the hæmolytic power should be tested.

Mr. LESCHER, after thanking the author of the paper, said that in some samples one wondered if the quality was ever there.

Mr. A. J. Jones expressed the view that it would be as well to investigate sugars, calcium ratios and other constituents.

Mr. FOURACRE pointed out that senega was not going out of use, as saponin was manufactured by the ton for the artificial silk and other trades.

artificial silk and other trades.

Mr. Gamble called attention to the doubtful quality of a great deal of the galenical "stuff" that was sold. One the galenical traubles was the craze for cheap drugs. The average retailer, so far as one could see, cared nothing for quality, but thought only of price. It was time that wholesalers made a stand. Concentrated infusions and liquors had had no real success. There was no prospect of any official emendation of formulas except through the British Pharmaceutical Codex.

Mr. LINDSEY remarked that there had been many com-

plaints about senega in large institutions.

Mr. Brewis thought it possible to specify in the Codex some drugs from which concentrated infusions could not be made.

Mr. LIVERSEEGE, replying to the discussion, said that, in one sample examined, a copious deposit amounted to only 0.6 per cent. of the total. He adhered to his nomenclature as the society of the control of the total of the control of the total of the society of the control ture, as the position in prescribing senega preparations was anomalous. A good concentrated infusion was desirable. Samples of mixture containing ammonium carbonate and infusion of senega would keep for two months.

On the motion of the CHAIRMAN, a cordial vote of

thanks to Mr. Liverseege was passed.

The last papers, presented by Mr. Evers, were the three following ones :-

### Malt Extract and Oil Emulsions

I.—The Composition of Commercial Malt Extracts and Cod-Liver Oil Emulsions

By J. M. Jones and T. McLachlan

### [ABSTRACT]

TWELVE emulsions of malt extract and cod-liver oil obtained from various sources have been examined with the results shown in the table :-

the results shown in the taste.										
No.	Oil by weight, per cent.	Malt extract by wt. (by diff.), per cent.	Total solids in malt extract, per cent.	Diastatic activity of malt extract (B.P.C.)	Alcohol by weight, per cent.					
1	19.81	78,89	73.1	1,060	1.33					
1 2 3 4 5 6	18.08	81.83	83,6	950	0.088					
3	18,31	80.98	73.6	840	0.709					
4	13.22	85,93	71.8	50	0.846					
5	10.01	89.26	78.0	660	0.737					
6	9.99	89.41	78.5	390	0.709					
7	9,90	90.1	79.1	680	nit					
8 9	9.75	90.25	79.6	270	nil					
9	8.90	91.03	76.2	30	0.07					
10	8.65	91.32	77.2	500	0.031					
11	7.19	92.80	79.1	24	0.013					
12	2.50	97.46	77.8	300	0.035					

While the majority of the samples contain an adequate proportion of cod-liver oil, it will be seen that in the case of one sample it is necessary to take 5 fl. oz. of emulsion to obtain a dose of a fluid drachm of cod-liver oil. The to obtain a dose of a finite diagram of control of the total solids in the malt extract were determined by taking 10 gm., diluting to 100 c.c. with water, and determining the specific gravity at 15° C. without filtering. Then:—Total solids =  $\frac{(\text{S.G.} - 1.0000)}{3.86} \times 10,000 \times$ 

 $\frac{100 - \frac{1.5 \ a}{10}}{\frac{100 - a}{10}}$  where a = percentage of oil by weight.

The alcohol content was determined according to the method of Elliot and Dalton ("Analyst," 1919, 44, 132).

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Fifty gm, of the emulsion was distilled with about 100 c.c. of water and 100 c.c. of distillate was collected. Five c.c. of the distillate was mixed with 25 c.c. N/5 potassium dichromate made with 40 per cent. by volume sulphuric acid, made up to 70 c.c., and boiled under a reflux condenser for fifteen minutes. After cooling, potassium iodide is added, and the liberated iodine is titrated with N/10 thiosulphate. A blank experiment was carried out in the same way, the difference in the two titrations being regarded as due to alcohol. Most preparations contain chloroform and other flavourings equal to about 0.02 per cent.

### H.-Vitamin A Content of Commercial Malt Extract and Oil Emulsions

By J. M. Jones.
[Abstract]

A NUMBER of commercial samples of malt extract and cod-liver oil emulsions have been examined for vitamin A. The extracted oil was tested by the antimony trichloride colour test. (Carr and Price, "Biochemical Journal," 1926, 26, 497.)

Separation of the Oil.—About 25 gm. of the emulsion was diluted with about 150 c.c. of water in a separating funnel and covered with a layer of about 50 c.c. of petroleum ether. Shaking is inadvisable, as a trouble-some emulsion is formed. After standing, the lower clear layer was drawn off, leaving the cream with a layer of petroleum ether above it. Twenty-five c.c. of brine was then added, and the contents were mixed by gently rotating the separator. After standing, the clear liquid was again drawn off, and the treatment with brine repeated. The clear layer of petroleum ether was then separated by pouring off from the sludge through a filter paper. The petroleum ether was then evaporated off at as low a temperature as possible. The colour test was then applied to the oil. The above method has been used on a sample of cod-liver oil without loss of vitamin A.

on a sample of cod-liver oil without loss of vitamin A. The Colour Test.—Two c.c. of the oil was made up to 10 c.c. with chloroform. Then 0.2 c.c. of this solution was treated with 2 c.c. of antimony trichloride solution in chloroform, and after one minute the colour was measured in a Lovibond tintometer in a 1-cm. cell, the number of blue units being noted. This number is multiplied by 85 in order to convert into U.S.P. biological units per gm., and so gain uniformity in the system of units. On this system a Norwegian cod-liver oil of good medicinal quality contains on the average about 500 units of vitamin A per gm.

Emulsion No.	Vitamin A units per gram of oil	Emulsion No.	Vitamin A units per gram of oil
1	690	7	$nil \ 160$
3	nil 460 =	9	630
- 5	690 840	10 11	460 300
6	840	12	480

The cod-liver oil extracted from a 23-year-old emulsion gave a colour test of about 20 units, showing that these emulsions retain their vitamin A activity for considerable periods.

### III.—Note on Testing Malt Extract and Oil Emulsions for Vitamin A

By J. M. Jones and Norman Evers.

### [ABSTRACT]

In the course of the work published in the preceding paper it was considered advisable to determine what loss, if any, of vitamin A occurred in the ordinary methods of extraction of cod-liver oil as used in analysis. A sample of cod-liver oil having a vitamin A content of 1,340 units per gm. (see preceding paper) was used in the first experiments. A 20-per-cent. solution of the oil in petroleum ether was allowed to stand over brine in a white glass-stoppered separator for seven days in diffused daylight. A part of this solution was separated and, after standing a further two days in a flask, the solvent was evaporated

on the water bath in the ordinary way. The vitamin A content of the residual oil was 1,190 units per gm. A second portion of the above solution was allowed to stand in an atmosphere of nitrogen for two days and was then evaporated in the same way. The vitamin A content of the residual oil was 1,130 units per gm. A 20-per-cent. solution of the same oil was allowed to stand in a separator over brine for seven days in an atmosphere of nitrogen. The petroleum ether was removed in vacuo. The vitamin A content of the residual oil was 1,190 units per gm. It will be seen that in each case a loss of vitamin of the order of 10 per cent, occurred. In the shorter period required for the extraction of the oil from an emulsion the loss was negligible. As will be seen later, if these solutions had been allowed to stand in the dark, this loss would probably not have occurred.

the dark, this loss would probably not have occurred. It was thought that possibly it would be a wise precaution to dry the petroleum ether solution with calcium chloride before evaporation in order to prevent the presence of traces of moisture in the colour test. It was found, however, that the residual oil gave no colour test. This surprising result was repeated and confirmed. Two portions of the 20-per-cent. solution of cod-liver oil described above were allowed to stand over calcium chloride in air and nitrogen respectively for twenty-four hours. Both gave negative results for vitamin A. The cod-liver oil itself was then allowed to stand over calcium chloride in air and nitrogen and the colour test was carried out at intervals. (The authors tabulated their results.) Evidently the loss of vitamin is much slower in the oil than in the petroleum ether solution, but it is nevertheless taking place.

nevertheless taking place.

The possibility of the formation of calcium soaps with the free fatty acids in the oil and absorption of the vitamin thereby was considered, but it was shown that when the calcium chloride was washed with petroleum ether, dissolved in dilute acid and extracted with petroleum ether, the extract gave no colour test. A further series of experiments was then started with solutions of cod-liver oil in petroleum ether and in chloroform standing over calcium chloride in both air and nitrogen. Samples were withdrawn and tested for vitamin A. A blank experiment was carried out in chloroform solution in air without calcium chloride.

		Vitamin A units after							
Solvent	Calcium chloride	One hour	Three hours	Five	Twenty- four hours	Thirty	Forty- eight hours	Seventy- two hours	
Petroleum ether in	Present	1,050	830	800	460	nil	_	_	
air Petroleum , ether in nitrogen	Present	1,050	850	800	trace	ntl	-	-	
Chloroform	Present	1,050	1,050	1,050	552	nil	- 1	_	
in air Chloroform in nitro-	Present	1,050	1,050	1,050	920	875	900	nil	
gen Chloroform in air	Absent	1,050	-	-	1,010	-	715	184	

The chloroform solutions maintained their activity for a longer period than those in petroleum ether, but ultimately all activity disappeared. It appeared possible that the calcium chloride was in some way accelerating the destruction of vitamin A which is known to occur when it is exposed to daylight. Solutions of cod-liver oil in chloroform with and without calcium chloride were then exposed in a quartz tube to the action of the rays of a mercury vapour lamp (3½ amps. at 240 volts) at a distance of 16 inches. The results indicated that the destruction of vitamin A by ultra-violet light in the presence of calcium chloride is much greater than in its absence. A solution of cod-liver oil in petroleum ether was then prepared, and allowed to stand with air, with and without calcium chloride, in the dark, being tested from time to time. The activity appears to have been fully maintained for forty-eight hours, which is in striking contrast to the results obtained in daylight.

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The results obtained in the above experiments are in some cases conflicting, and further work is evidently required, but there is clear evidence that the use of calcium chloride for drying solutions of oils which are to be tested for vitamin A should be avoided. There is also sufficient evidence to show that such solutions should be kept as far as possible in the dark. It is clear, too, that further work is required on the mode of action of calcium chloride. Light certainly appears to be con-cerned in it. Further work is contemplated with other drying agents. Acknowledgment is made to Allen & Hanburys, Ltd., for permission to publish these papers, and to Mr. S. G. Stevenson, B.Sc., A.I.C., for carrying out some of the tests for the third paper.

### DISCUSSION

The CHAIRMAN remarked that a number of interesting points had been raised. The varying percentages in these

emulsions were perhaps a little alarming.

Mr. J. R. Hill instanced a case in which a sample taken from the lower portion of the contents of a jar gave a low percentage of oil. There appeared to be a tendency for the oil to rise, particularly in a warm place.

Mr. WATKINS suggested that vitamin A might be volatile

in a sense that we did not recognise.

Mr. Gamble inquired whether the strength of the samples was shown on the labels.

Mr. Evers, replying to the discussion, said that it was not usual to find separation if the product was properly made: he had kept some samples at 37° C. without change. Vitamin A could be distilled at a very high temperature. The strengths of his samples were indicated correctly in several cases.

The Chairman, in declaring the business of the Section closed, moved a vote of thanks to the authors, the Council of the Society, and the editor of the "Quarterly Journal."

This was cordially endorsed by the audience.

### Delegates' Meeting-Tuesday Afternoon

There was a large attendance at the delegates' meeting There was a large attendance at the delegates' meeting in the Town Hall on Tuesday afternoon, July 24, and the two papers read by Mr. Beardsley and Mr. Keall respectively aroused animated discussions. The president of the Pharmaceutical Society, Mr. Herbert Skinner, occupied the chair, and opened the proceedings by welcoming the delegates. Mr. Beardsley's subject was

### The Training of Apprentices in Wholesale Houses

### [ABSTRACT]

The Pharmaceutical Society, he said, should be a body that united all sides of pharmacy. The difficulty arising to-day was that while the retail pharmacist and the hospital dispenser might have apprentices the wholesale houses were not allowed to do so. It had been suggested that the pharmaceutical qualification meant something more than the right to keep open shop, but if it did not he felt he had no case to put forward. To him, however, the qualification meant something more. It meant that he was a student in pharmacy, one versed in the art of pharmacy, preserved to carry into the confit. in the art of pharmacy, prepared to carry into the craft all that he could give to it. The laboratory of the wholesale houses should be the training place. Some years ago, the Society's examiners would tell them, it was no uncommon thing for a man in the wholesale trade to enter for the Minor examination without adequate training the laboratory of the wholesale t ing, and the apprentice in the laboratory of the wholesale house was nearly an unknown factor. The question that now arose was one of the greatest importance to the craft as a whole, namely, were the laboratories of the wholesale houses to be controlled in the future by men who had a different qualification from that of the hospitals and the pharmacy? Mr. Beardsley emphasised the changes that had taken place in pharmacy within recent years. There were many small quantities, he said, that demanded much care and attention from the skilled pupil, who had to spend many hours in National Health dispensing. It was not an unusual practice for a pharmacist who had to get an out-of-the-way product to

send to the wholesale house. Surely if the Pharmaceutical Society recognised the hospital dispenser there was no difficulty in allowing one apprentice in a wholesale house who could attend during that apprenticeship sate nouse who could attend during that apprenticeship for a thousand hours in an open shop and thus learn the retail side of the business. If something were not done to keep the various sides of the craft under the same qualification it would be to the detriment of the Society. The first basic principle to be observed regarding apprenticeship in wholesale houses was that the laboratory should be one approved by the Society, secondly, the training should he only under a qualification, either chemist and druggist or pharmaceutical chemist; thirdly chemist and druggist or pharmaceutical chemist; thirdly, the apprenticeship should be at least three years, with the addition of a thousand hours spent in open shop. the addition of a thousand hours spent in open shop. There was a need for apprentices in the wholesale houses. Unless they accepted men from these houses into the Society's qualification they would seek qualification in some other sphere. Some of them already went in for their B.Sc. and the F.I.C. There were many things which only the man in the wholesale laboratory would do, and which, even if the retail chemist had inclinations towards it he had not the time to do. The man from the wholesale house did the research work and the work for the British Pharmaceutical Codex and the work for the British Pharmaceutical Codex, and the papers that were given were chiefly contributed by such men. It was true that they were not trained in sales-manship, and that was one point of weakness. But the Society, when it agitated regarding the taking of apprentices, evidently thought nothing of salesmanship. He could see difficulties arising in the future if men took their capabilities and their research work in another direction. Government departments would say, "Where are the men who write your papers? They are not members of your Society; it is closed to them." Had the retailer anything to fear from this departure? He could see nothing. He had failed to find the names of more than from 35 to 40 wholesale houses. He considered that the Society's best interests would be served by men with their own qualification being at the head of the departments of wholesale houses. The pharmacist was relying more upon the wholesale house. It had been said that apprentices trained in the wholesale houses Society, when it agitated regarding the taking of apprensaid that apprentices trained in the wholesale houses would go into retail practice, but he did not think that likely in view of the short hours, free evenings and Saturday afternoon holiday which the wholesale houses enjoyed. With regard to the question as to why qualified men should not be taken by the wholesale houses from the retail shops, he pointed out that a certain amount of labour was employed in the wholesale laboratories under trade-union rules. Thus there would be great difficulties in the way of such a suggestion being carried out from a labour point of view. Then they would not expect a young man who had served a certain amount of time in a retail shop to go and finish it in a wholesale house. He felt that the only way was for an apprentice in a wholesale house to spend three years there and then to have experience of handling small quantities in the retail shop. Such persons would be able to satisfy examiners that they were fit and proper persons to have the Society's qualification.

### DISCUSSION

Mr. JUDGE (Leeds) opened the discussion. He said his branch had only discussed the question from an academic point of view, and as a consequence he was tied down to vote against the admission of apprentices in wholesale houses. He was quite sure that if the branch had had the opportunity of hearing Mr. Beardsley their decision might have been different. He suggested their decision might have been different. He suggested that the question should be sent out to the branches for reconsideration, and that a scheme should be drawn up by the Council. He quite agreed that the Society should be broad enough to accept any man engaged in the various branches of pharmacy, and that it was advisable that every man should hold the same qualification.

Mr. L. Smith (Hereford) asked whether Mr. Beardsley intended that pupils should be under the wholesale firm or the head of the laboratory. He understood from the

secretary of the Society that any man could call himself a manufacturing chemist.

The PRESIDENT : He can.

Mr. TAYLOR (Bristol) spoke in support of Mr. Beardsley, but suggested that pupils should be required to have passed Part I before becoming apprenticed. That was the rule in his hospital, and he would like to see it adopted in all such institutions.

Mr. Briggs (Chesterfield) pointed out that Mr. Beardsley had advocated the training of apprentices in the laboratories of the wholesale houses, and that raised

the point as to whether such houses were qualified or not.

Mr. Berry (Birmingham) supported Mr. Beardsley,
declaring that if they could get apprentices in the wholesale houses it would be better than the system now in

vogue in the retail shops.

Mr. Davis (Leamington) said the most important point in connection with Mr. Beardsley's scheme was that it would take away the time spent in the pharmacy and devote it to the professional side. From the business point of view of the ordinary chemist and druggist who kept an open shop to keep himself and his family, they should remember that they were gradually increasing the time an apprentice spent away from the shop. Men were coming forward now with very little experience of retail pharmacy, whereas a few years ago they spent four years in the business dusting bottles, sweeping floors and doing other duties. Then they occupied a few years as improvers, and when they obtained their qualification they could be left in charge of a shop. They must not increase the professional side of pharmacy too much, and he thought a thousand hours in the business side was not sufficient.

'Mr.' Mallinson (secretary of the Retail Pharmacists' Union) said there was a danger of widening the gates through which a boy could come into pharmacy, and he suggested that if the Council took such a step there should be some limitation of the number of apprentices that could be taken by a qualified man. To his mind, the maximum should be one apprentice per qualified man, and if they opened this particular door it was more essential than ever that they should impose a limitation. He thought retailers were entitled to ask the Council

to give them that protection.

Mr. FRANKLIN (Manchester Mr. FRANKLIN (Manchester) agreed regarding the importance of limiting the number of apprentices, and suggested that not more than three should be allowed in a wholesale house, whatever size it was. He thought the wholesalers were asking for something that was an

act of justice.

Mr. Linstead (secretary and registrar of the Society) said that at the present time a pharmacist had only two legal obligations to the public, one with regard to the dispensing of Insurance prescriptions and the other the selling of poisons. So far as he could see, a boy who had had his apprenticeship in the manufacturing would be in the same legal position as one who had had a training in the retail. They wanted to get all the best people they could into pharmacy and into the Society, wherever they were. He suggested they should not wherever they were. He suggested they should not decrease the avenues into pharmacy, but rather raise the standard of the examinations, which was the other way of relieving the difficulty. The retail pharmacist would not pay so much to the boy who went to him without avenue and that would tend to make those trained experience, and that would tend to make those trained wholesale houses stick to the manufacturing side.

The PRESIDENT said it was obvious that some limitation of the number of apprentices should be imposed. He thought all those present who were in institutions would agree that the introduction of apprentices in such places had been a very good thing, and his experience was that they turned out very good chemists. Mr. Beardsley had suggested that apprentices should be put in laboratories, but he (the speaker) thought they should not be tied down in that way. A boy was apprenticed to the individual pharmacist in charge in the wholesale house, and it was the Council's duty to see that that man did his work properly. They should not let anyone come into pharmacy whom they could not embrace in the Society. If the wholesale houses loyally abided with the regulations on the same basis as public institutions, neither those in the retail nor those in the public institu-

tions had anything to fear.

Mr. Beardsley, replying to the discussion, said he was not asking that a new avenue should be opened into pharmacy, but simply for the just rights of the wholesale houses. They felt that they had done something for the advancement of pharmacy, and in the future they would do more. Something like 1,500 students were coming up for the examinations in July, whereas in the wholesale houses there would not be more than thirty apprentices.

A resolution asking the Council to give favourable consideration to the matter was passed, only two dele-

gates voting against.

Mr. Keall's subject was

### The Value of the Services of Pharmacists on **Public Bodies**

[ABSTRACT]

Mr. KEALL said he had felt for some time that pharmacy generally was losing its grip on the public life of the country. A craft like pharmacy, charged with responsible duties, should see to it that it was represented by men holding a watching brief for pharmacy. As far as Insurance Committees were concerned they had a direct place, and, of course, there were many men on public bodies who had done good service in the interests of pharmacy. The question was answered in a positive manner by reference to the work of men like Sir Wm. Glyn-Jones and the late Mr. R. A. Robinson, men who had devoted their lives to public work and to pharmacy. The pharmacist should place his technique, his influence, and his special knowledge at the service of the community. Take, for instance, the question that frequently arose on public bodies as to applications for licences for the sale of agricultural poisons, if there were no pharmacity on the authority such applications often went pharmacist on the authority such applications often went through because those who received them did not understand the position. Where any question of public health came up the value of the pharmacist was very great. Then there was the value of the individual. He had been long enough in pharmacy to appreciate the altera-tion that had taken place in the lives of pharmacists. The Shops Act had emancipated them from the point of view of time. A pharmacist of years ago lived a self-contained life. He was prepared to spend the whole of his days and nights in the interest of the community, but it was a paralysing life, and did not give him any desire to take any interest in the things outside his sphere. But now all that had changed, and he should place his services at the disposal of the community, and in so doing he would not only benefit others but also himself. There was the educative value and widening effect of the positions to which a man aspired in the public life of the community. Then there was also the value of public service to the craft, and that might be classed as a selfish point of view. Realising the magnitude of the value of pharmacy as a craft to the community, he suggested that the influence that could be acquired could be translated into power. Pharmacists had never been able to make themselves as articulate as they should be. But if they could only get an increased appreciation of the value of public service among their men he felt sure that it would be the beginning of increasing the power that they could apply. After all, they never knew when they would be called upon either to attack or defend their interests, and if they had got a body of men throughout the country who were responsible of the community, their proper place in the public life of the community, their work could be translated into power. This, if harnessed in the right way, could be most effective if pharmacy were attacked. The path of public life way never a proper work it was cortained at the contract and it was cortained at the contract. public life was never easy, and it was certainly not a bed of roses. The growth of corporate bodies in this country had had a great influence on the public life of the country. To-day public life was often difficult, because the men were more or less nominees of the



corporate bodies. That was against the public spirit, but he did not think, generally speaking, it was acting so adversely. As far as local areas were concerned it was vital that there should be pharmacists who were prepared to come forward and work in the interests of the community. He would like this question to be considered by every branch of the Society during the coming session. If branches stood for anything they should stand for something more than their own interests. They should see that pharmacy was represented on any public body that was in their area. They had got to have some method of co-ordination and utilisation. He believed that the secretary used to have a register, by which he could get into touch with a Member of Parliament or local public man when pharmacy was going to be attacked in any area. He suggested that register should be very largely increased so that similar steps could be taken on any question affecting pharmacy as a craft. The curse of the age was apathy. But he hoped that as a result of that meeting they would go back to their branches viewing this question from a fresh point of view, and thoroughly appreciating the point of view that they had got to take care they possessed the necessary power, properly harnessed, so that they could use their influence in an effective manner. (Applause.)

The President said in going about the country he was convinced that pharmacists did not take the part in public service that they should do. Whether it was that they were taking their part and their fellow pharmacists did not know he could not say. But he felt there was a lack of interest. He could not see why such a lot of intelligent people as pharmacists were allowing things to go by. He thought it would be as well if their branches got to grips with this question. Men who went in for public life needed a particular disposition to stand before the electors and have rotten eggs thrown at them. Public service was a most thankless task. A man might go on for twenty years, and then he turned down by the electors. But the proudest, the greatest and noblest thing in life was service, and service to the community was the greatest thing they

could render.

Mr. Hardy (member of the Society's Council) spoke from long experience of public life in Cumberland, where, he said, pharmacists had taken a very active part in local affairs for many years. In this connection he mentioned especially Mr. Tom Ridley, sen. But men in a small area where they were engaged in a one-man business had the difficulty to face that unless committees of the public authority met in the evenings they could not take part in public life. He emphasised the services that could be rendered by pharmacists, particularly in regard to education and public health, and questions closely affecting their calling.

Mr. Warson (London, N.) said he was serving on the borough council in his own locality, and he thought he had been some use when questions affecting pharmacists were being considered, and also questions of public health. He thought it would be a very useful thing throughout the country if one chemist in each town or district would go to the local authority. He was told that the trouble was that they had not got the time, but surely this was not the case with all of them.

Mr. P. F. Rowsell, member of the Council, said that chemists had not in the past taken an interest in the life of the country as would entitle them to the estimation of the public. He hoped they would send this matter to the branches for discussion during the winter months. He saw no reason why judicious arrangements should not be made so that every public body should have some chemist on it representing the interests of chemists and also of the public generally. Mr. Keall had not mentioned Parliamentary representation, but surely that was a sphere of life in which they should aim to have representation. He did not know what was going to be the result of the inquiry into the Poison Laws, but there might be some legislation arising out of it He thought the time was coming when there should be sold by the duly qualified chemist and druggist.

Dangerous drugs had been regulated because they were more potent and likely to do harm to the public; but other drugs were being sold promiscuously throughout the country. This pernicious taking of drugs that came under no regulation was a danger to the health of the country. The time had come when they should consider, either by themselves or in combination with other bodies, and seek some definition as to what were the interests of the chemist and druggist and see that those interests were protected. The sale of articles of the B.P. and the B.P.C. should be restricted to pharmacists only, and he hoped the delegates in their various organisations and the Council would begin to think what ought to be done in this direction.

Mr. DYER (Bradford) suggested that branches should compile a panel of likely men in their area to serve on local councils. With regard to one-man businesses, the difficulty might be met by a system of paying men to act as locum tenens, and he mentioned the possibility of the Parliamentary Fund being used for the purpose.

Mr. Cross (Bristol) asked in view of the Parliamentary

Mr. Cross (Bristol) asked in view of the Parliamentary Fund which had been described, whether any candidates had come forward. Had any candidates been proposed?

Mr. Thorpe (Manchester) pointed out the apathy that existed among members of the Society. If the delegates present would make a fight for youth in their branches he thought it would be to the good of the craft. In Manchester youth was making a big and successful fight. The President said they had to face the fact that if those who took the public service as their interest in life failed to do the work it was bound to get into the

The President said they had to face the fact that if those who took the public service as their interest in life failed to do the work it was bound to get into the hands of those who had not the same sincere purpose. The best thing they could do was to recommend to the branches the necessity of encouraging in every respect the service of the community in the particular areas. With regard to the Parliamentary Fund and representation in Parliament, the only thing it was justifiable for him to say in public was that the Committee set up in response to the discussion at the Leicester Conference was working thoroughly with a view that in the next Parliament they should have someone representing pharmaceutical interests.

Mr. Keall, replying to the discussion, said he hoped that it would have the effect of creating a desire for public service, and that they would have at the head of affairs somebody who was of them and knew their work. He hoped that the meeting would request the Council to invite the branches to notify them of those who were engaged in public service so that a panel could be formed that would bring the register up to date.

that would bring the register up to date.

The delegates adopted Mr. Keall's suggestion.

Votes of thanks to the speakers and the President brought the session to a close.

### Delegates' Meeting-Wednesday Morning

Delegates numbering about 100 assembled on Wednesday morning to hear and discuss a paper on the training of the pharmacist. The president of the Society (Mr. Herbert Skinner) was in the chair, and several members of the Council were on the platform.

of the Council were on the platform.

The PRESIDENT at once called on Mr. E. Saville Peck, who, he said, needed no introduction, to address the meeting.

Mr. Hines, intervening, inquired whether, in view of reports appearing in the public Press, this meeting was

to be regarded as their own domestic affair.

The PRESIDENT said it was a question for individual speakers. He himself had confidence in the Press. Mr. Peck then read his paper, entitled:—

# What Functions should the Pharmacist be Trained and Qualified to Perform?

### [ABSTRACT.]

Is there a definite place in our social organisation for pharmacy? Are there definite functions for the trained and qualified pharmacist to perform? Is the pharmacist, by virtue of his training and qualification, the person who can perform these functions to the best advantage, to the

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community as a whole? Does the training which the pharmacist receives to-day best fit him to perform those functions? Again—in view of the possibility of drastic changes being made in the treatment of disease in the mear fiture, along biochemical lines—is there likely to be any radical alteration in the functions which the pharmacist will be called upon to perform? Will these changes necessitate a modification in our present system of training and in our curriculum of study for the qualification of pharmacist? These and many others at once suggest themselves. I will, however, endeavour to limit my remarks in the main to the one that forms the title of this paper: "What are the Functions for which the Pharmacist should be Trained and Qualified?"

To answer this question we must make a general survey of the various phases of the calling as it exists to-day, and consider the modern tendencies which may influence the practice of pharmacy in the future. Take the most simple example of all. The chemist and druggist, in the words of the Act, is "keeping open shop for the sale of poisons."

### THE PHARMACIST IN RETAIL BUSINESS.

Let us take the case of the chemist (with either the "minor" or "major" qualification) who is in retail business. His functions are many, and vary according to the district in which he conducts his business. In a small country town he must have knowledge of and carry a stock of all sorts of commodities, many of which are unknown—except by name—to his confrère in a suburban residential district; he is looked to for advice on questions which have only the remotest connection with pharmacy as seen from an academic point of view, questions which often require a knowledge of agriculture, horticulture, and veterinary science. He must be prepared at all times to dispense prescriptions, both N.H.I. and private to assist the medical man in any emergency, by the extemporaneous preparation of a drug or the improvisation of a surgical appliance, and even in cases of accidents or of poisoning to render first aid. In large towns the functions which are assumed by the chemist vary according as to whether the business is carried on in a workingclass, middle or upper-class residential district, or in the business quarter of the city. In every case he must hold a comprehensive stock of drugs and chemicals, and toilet goods, and be conversant with their uses and relative value in certain conditions.

In theory it is to be acquired during the years of apprenticeship which precede the course at the School of Pharmacy, when the final polish is given in the more technical subjects. In practice, however, a very different state of affairs obtains. It is a significant fact that no proposal to inspect pharmacies where apprentices are being trained has ever been allowed serious considera-tion; the opposition, veiled though it may be, comes probably from the practising pharmacist. I maintain probably from the practising pharmacist. I maintain that the condition and equipment of the average pharmacy for technical purposes is worse to-day than it was five and twenty years ago, and were it not for the many efficient schools of pharmacy recently established, the failures in the examination would be greater in the subject of practical pharmacy. One has only to consider what has been done by the operating surgeon in the large hospitals and nursing homes, by the dental surgeon in his surgery, in recent years in the matter of equipment and the provision of septic conditions to realise how far pharmacy has lagged behind in this respect.

The trend of circumstances, such as the increase of B.P. standardised preparations, the high spirit duty, the prescribing of proprietory medicines and the introduction

prescribing of proprietory medicines, and the introduction of animal products, has forced the chemist willy-nilly to delegate to others certain duties which at one time were regarded as being part of his routine work, notably the preparation of galenicals, but to-day, if we are to believe the wholesale manufacturers, numerous chemists go fur-ther and rely on the wholesaler to do an important part of dispensing of all medical prescriptions should be confined to the retailer.

There is yet a further point that Dr. Burn brought to

the notice of the delegates last year—that of the necessity for and the advantages of being trained in the analyses of body fluids, taking blood counts, examinations of sputum, the preparation of vaccines, etc. A discussion upon whether these are functions which the pharmacist should be trained and qualified to perform would be useful. My own personal views have been stated in the Harrison lecture given last November, and I will say no more on that score at the present time. Before leaving the question of the retail chemist or practice of pharmacy there is one more aspect of his work on which I should like to touch; as a business man, it is essential that he should have a good working knowledge of bookkeeping, account-

I attach no importance whatever to that mysterious speciality known as "salesmanship." Far too much nonsense has been talked about "salesmanship," as if it were some esoteric and hardly acquired faculty, whereas it is nothing of the sort. The chemist does not exist for the purpose of persuading people into having something the purpose of persuading people into buying something

they neither want nor need.

The functions of the pharmacist in retail business brings him in close contact with the public, generally calling for him in close contact with the public, generally caring for a keen appreciation of human psychology. He must know how to deal with the varying moods of the persons whom he serves. He must observe the ordinary laws of professional secrecy when information of confidential nature comes his way. His intercourse with his pharmaceutical confreres should be friendly and loyal. Instruction on confrères should be friendly and loyal. Instruction on lines somewhat approaching these should be attempted during the pupilage stage, and occasional lectures upon "Pharmaceutical Etiquette" should be given during the course at his school of pharmacy. So far we have only discussed the functions of pharmacist in retail pharmacy as we know it to day. Let us look to the future. /Surely if it is insisted upon, as in the case of vegetable drugs, that the pharmacist should have an intimate knowledge of the structure and habits of the plants from which they are produced, he should also have such knowledge as will familiarise him with the sources and preparations of the various hormones of the endocrine glands.

### THE HOSPITAL PHARMACIST

Let us now consider the pharmacist in charge of the laboratory and dispensary of a large hospital; the importance and responsibility of this class is steadily increasing. What are his duties and functions? They include the selection and purchase of drugs and other materials on a large scale, the manufacture of the various medicinal preparations in big quantities, the dispensing of thousands of prescriptions, solutions, etc., in collaboration with the medical men and the organisation of the pharmaceutical staff. They may also include the delivery of lectures to the students of the medical school attached to the hospital, and possibly to the nursing staff. Is the curriculum for the Ph.C. qualification and the London degree sufficiently comprehensive to enable him to collaborate on equal terms with the medical staff on those questions which are con-cerned with something more than pure medicine and surgery?

In the past the pharmacist, with good reason, perhaps, has feared to enter those preserves which custom has regarded as being the exclusive property of the medical profession. Need he fear to-day? Already medical men and laymen, each an expert in his own branch of science, are working side by side in the laboratory. Why, then, should the pharmacist hesitate? An outstanding example is the recent collaboration of Messrs. Barnard and Gye in their researches on the causation of cancer, and for another example we need go no further than our own Pharmacological Laboratories. I repeat that the Society should be able to issue certificates of competency in every branch of science upon which the practice of pharmacy in any of its developments, may be based.

### Wholesale Pharmacists

Somewhat similar are the duties of the pharmacist who is engaged in a wholesale establishment. He is required to deal in large quantities of drugs and chemicals; but he

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also has his own peculiar problems. Thus, as a pharmacognosist he is required to be an expert in the recognition of crude drugs-as a chemist, he must be conversant with the extraction of their active principles and the manufacture of synthetic and organic preparations, and as a pharmacist he must be competent to manipulate them so as to produce the many preparations which the retailer requires. He must be ready to undertake the dispensing of those prescriptions which are beyond the skill or possibly the inclination of the retail chemist. He must know something of chemical engineering. Can the one qualification, even though it be the highest the Society has to offer, as it exists to-day, cover all these varied functions? There is a tendency nowadays for the higher and more technical posts in a large manufacturing house to be held by persons possessing the diplomas of bodies other than the Society. Need this continue in the future?

I am aware that this problem is bound up with the question of the recognition of the training of the apprentices in wholesale houses, but that question has already been debated.

### A FOURTH CLASS

There is yet a fourth class to which reference should be made—that of those pharmacists who have chosen the pharmaceutical teaching profession as their walk in life, and again those who have decided to take up analysis and research. One would have been glad to have been able to have included a further class, that of the army pharmacist, with his special needs in training—but whilst the present obstinate attitude of the British War Office almost alone in the civilised countries remains—it is futile to discuss this.

I take it that we are all agreed that the training, examinations, and diplomas of the Society should be sufficient to provide for every phase of the profession of pharmacy. To allow any other body to issue such certificates unchallenged would be an irreparable loss to the prestige of the Society and the progress of pharmacy generally. The student at the outset of his career must decide for which of the one or other branches into which the calling is being divided he shall equip himself, knowing full well that once he has made his choice he should abide by it. He will then put himself on the straight road for the training and qualification which will enable him to perform the functions of that class of pharmacy which he has chosen for his life's work.

### Discussion

The CHAIRMAN, in opening the meeting for discussion, remarked that Mr. Peck had laid himself open to be shot at.

Mr. Laidlaw (Lockerbie) expressed the opinion that the professional and technical side formed a very small part of chemists' actual experience. If they were not salesmen, there would be very little left for them at the sateshen, there would be very little left for them at the end of their careers. He could see but little future for the scientific pharmacist. They were subject to all sorts of unfair competition, and they had themselves to blame, as they had entered businesses not strictly their own.

Mr. Thomas said that the "challenge" as to retailers being unable to handle unusual forms of medicament was

an economic issue. He did not agree with Mr. Peck as to salesmanship.

Mr. WARE (Plymouth) suggested that there should be alternative qualifications in different subjects, on the lines of the Institute of Chemistry examinations. One qualification did not meet all requirements. He did not like the snobbish idea of drawing a line between professional and business chemists.

Mr. Thorpe (Manchester) suggested ironically that chemists were not capable of taking care of their drugs or poisons, and had to be frequently visited by inspectors. Welfare centres were another grievance. Patent medicines should be through out by the physical if the cines should be thrown out by the pharmacist; if the grocer wanted them, "let him have them."

Mr. Morgan disagreed with the previous speaker, and added that first aid was useful to chemists. They did not make enough of the surgical side of the profession. There might be a supplementary examination.

salesmanship, the wholesale houses had the finest salesmen; they persuaded medical men to prescribe their pro-Water and sugar analysis were other things that might be cultivated by chemists.

Mr. Kirkey (Manchester) congratulated the meeting on hearing the paper. As to specialisation, when should a young man make his choice? Were the proposed new subjects alternative with or additional to an ordinary course? Many of these things had already passed out of the photography of the proposed new subjects. the hands of the pharmacist. Salesmanship implied a flair for anticipating what customers wanted. Chemists

must guard the customer from possible danger and inspire confidence. The whole of the territory of examination subjects was being mapped out rapidly.

Mr. Durr (Glasgow) related an incident of a box of pills being brought to him from another establishment; the weight of each ordered was 4½ gr., but there were six or seven different weights. He was opposed to first aid as a side-line, seeing that it brought with it liability for any damages resulting. Salesmen should not endeavour. for any damages resulting. Salesmen should not endeavour to sell what was not wanted.

Mr. Twigg (Withernsea) did not think that any alteration in the curriculum was needed at present. Many medical fads were likely to lead to a blind alley. Was it necessary to saddle the Council with post-graduate courses or the equivalent?

Mr. LINSTEAD suggested that the discussion had gone a little off the appointed lines. Dr. H. H. Dale had recently used, at Bloomsbury Square, the word "recordination." Chemists had looked on the retail shop as the be-all and end-all of their existence, but they had to follow present lines of development.

A DELEGATE expressed the view that all the various reconverged to the public in the retail shop.

Avenues converged to the public in the retail shop. It was wrong to suggest handing over proprietaries to the grocers: customers had to be safeguarded. Many pharmacists had the ability to do analyses, but not the opportunity.

Mr. Reed (East Metropolitan) said that pharmacy would have to scrap apprenticeship, and that young men would have to be trained in schools of pharmacy.

Mr. STAINER (Folkestone) wished to raise the standard of entrants to pharmacy. Other arts and crafts had stiff entrance examinations. Many pharmacies were still ill-equipped.

Mr. Crawford (Glasgow) said that many windows were filled with electric light and proprietary salts—(laughter)—and carboys had been abolished. Chemists were "humbugging" the public—and themselves. (Laughter.) He thought a distinct change in pharmacy was coming.

Mr. Berry (Birmingham) remarked that pharmacists were not being trained to take charge of manufacturing processes. Retail pharmacy was in a bad state—the seller of gramophones and soaps was living like a parasite on his more professional brethren.

Mr. Peck, in a brief reply, said that the discussion had been interesting and virile. Patients should be helped if necessary by way of first aid, but should be sent to a medical man, and this principle applied also to prescribing. Pharmacy must progress as new developments occurred.

The CHAIRMAN closed the proceedings by moving a vote of thanks to Mr. Peck, which was carried by acclamation.

THE CHEMIST AS SALESMAN.—Under this title the "Daily Telegraph," July 26, devotes considerable space to Mr. E. Saville Peck's paper on "What Functions should the Pharmacist be Trained to Perform," while should the Pharmacist be Trained to Perform," while from among the remarks of those who took part in the discussion reference is made to those of Mr. A. E. Thorpe, Manchester, and Mr. A. G. Laidlaw, Lockerbie.—The local papers also dealt at considerable length with the affairs of the Conference, and in one instance the chairman's address was given such prominence that the work of the Conference cannot fail to create an impression from which Cheltenham chemists should be impression from which Cheltenham chemists should be able to derive advantage.

Who Were There

The following is the official list of members and visitors attending the Conference:—

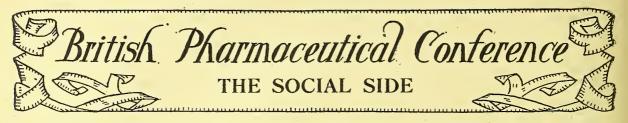
visitors attending the Conference :-Anderson, D., London
Adams, Miss E., London
Arthur, H. P., Glasgow
Amos, John, Wrexham
Awes, J. W., Manchester
Aves, Mrs. J. W., Manchester
Appleton, J. T., Sheffield
Appleton, Mrs. J. T., Sheffield
Aspell, J., Bath
Rain, Wiss, W. MaD, Glasgow Aspell, J., Bath
Bain, Miss M. MeD., Glasgow
Blain, W. R., Bolton
Blain, Mrs., Bolton
Burgess, Mrs., Brighton
Burgess, Mrs., Brighton
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Bennett, R., Harrow
Beunett, Mrs., Harrow
Beunett, R. P., Harrow
Beardsley, W. J., Woodford
Green Green Beardsley, Mrs., Woodford Green Boyes, G. R., London Brackenbury, Miss, Middles-Brackendury, brough Brindle, H., Manchester Brindle, Mrs. H., Manchester Browne, Frank, London Browne, Mrs. F., London Briggs, G. W., Sutton-in-Ashfield
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Reacock, J. H., Leeds
Brembridge, R., Actou
Brindle, E., Edinburgh
Brewis, E. T., Leytonstone
Brinson, Mrs. W., Liverpool
Brinson, Mrs. W., Liverpool
Bowie, G. D., Londou
Berry, H., Birmingham
Bostock, Northwich
Cane, W. E., London
Cane, Mrs. W. E., London
Culbert, W. S., Airdrie
Culbert, H. S., Coatbridge
Clark, H. B., Cheltenham
Clark, Mrs. H. B., Cheltenham
Crawford, A. Classow nam Crawford, A., Glasgow Chalmers, W., Surbiton Chalmers, Mrs. W., Surbiton Carrington, O. L., Chipping Norton Norton Cleworth, John, Manchester Cleworth, Mrs., Manchester Cleworth, Miss, Manchester Clubb, W. H., Liverpool Crummack, G. C., Leeds Crummack, Mrs. G. C., Leeds Corfield, C. E., London Collins, J. A., Manchester Collins, Mrs. J. A., Man-chester Collins, Mrs. J. A., Man-chester Chaloner, F., Preston Canlkett, C. W., Cheltenham Canning, Miss C., Wallasey Chapman, H. E., London Cheshire, R. Cheltenham Cheshire, Mrs. R. O., Cheltenham Clement, H. E., Hampton Clement, A., Hampton Hill Carr, F. H., London Carr, F. H., London
Dunn, W. R., Wolverhampton
Dnff, P.; Glasgow
Duff, Mrs. P., Glasgow
Downing, J., London
Downing, Mrs., London
Davies, Miss N., Birmingham
Duncan, Miss, Dundee
Deane, H., Sudbury
Deaue, Mrs. H., Sudbury

Dyer, F. J., Shipley
Dott, D. B., Musselburgh
Dobie, Miss E., Birkenhead
Davis, H., Swansea
Evans, G. W., London
Evaus, Mrs. G. W., London
Evers, N., Cheam
Evers, Mrs. N., Cheam
Evers, Mrs. N., Cheam
Evers, Mrs. N., Cheam
Evans, D. H., Liverpool
Freke, Mrs., London
Franklin, J. H., Manchester
Franklin, J. H., Manchester
Franklin, Mrs., Mrs. ham
Ferrey, G. J. W., Cheadle
Hulme
Ferrey, Mrs. G. J. W., Cheadle
Hulme
French, J. E., Sittingbourne
French, Mrs. J. E., Sittingbourne
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bourne
Fouracre, R., London
Foden, T. H., Birmingham
Falding, W. B., London
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Goldsworthy, W. J., East
Finchley Goldsworthy, W. J., East Finchley
Gilleghan, H., Leeds
Gilleghan, Mrs., Leeds
Guthrie, T., Glasgow
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Gamble, Mrs. F. W., Harrow
Gamble, G., Harrow
Gilmour, J., Dunfermline
Gower, J., Llanelly
Gregory, C. K., Cheltenham
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Gregory, Mrs. B. W., Cheltenham
Gregory, Mrs. B. W., Cheltenham
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Buzzard
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Jackson, Mrs. J. G., Sheffield
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Jack, Mrs., Arbroath
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Jones, A. T., Cardiff
Jones, A. T., Cardiff
Jones, A. J., Liverpool
Jones, H. Humphreys, Liverpool
Jones, Mrs. H. Humphreys,
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Lloyd, Miss, Cheltenham
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Mallinson, G. A., London
McBride, A. C., Ireland
Miller, H., Cheltenham
Miller, Mrs. H., Cheltenham
Miller, Mrs. A. M., London
Mehuish, A. R., London
Mehuish, A. R., London
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Peck, E. Saville, Cambridge
Purdie, Miss I. A., Edinburgh
Prince, Miss F., Nottingham
Price, E. G., Lewisham
Price, Miss, Lewisham
Price, Miss, Lewisham
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Prior, J. S., Stamford
Prior, Miss A., Stamford
Prior, Miss A., Stamford
Prior, Miss, Manchester
Pike, Miss, Manchester
Rushton, D. J., Birmingham Rushton, D. J., Birmiugham Rushton, Mrs. D. J., Birming-

Rushton, N. F., Birmingham

Rushton, Mrs. E., Birmingham Robertson, Miss E. W., Robertson, Dundee Roberts, Miss I., Manchester Rogers, E. P., Stratford-on-Rogers, E. F., Seaton Avou
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Richardson, A., Hull
Rees, D. A., London
Rees, Mrs. D. A., London
Rowsell, P. F., Exeter
Reed, J., West Ham
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Radford, P. J., Chelteuham
Radford, Mrs. P. J., Cheltenham Skinner H., London Scott, J. R., London Sproule, Miss, London Sutcliffe, W., Bradford Scholes, W. I., Eccles Shuttleworth, Miss Middlesbrough
Scroggie, J. H., Edinburgh
Scroggie, Mrs. J. H., Edinburgh
Sweatman, Miss M., Reading
Smith, F., Norwich
Smith, Mrs. F., Norwich
Short, G. R. A., London
Southerden, F., Exeter
Southerden, Mrs. F., Exeter
Smith, F., Birmingham
Smith, Mrs. F., Birmingham
Smith, Miss M. A., Birming-ham Smith, Miss M. A., Birmingsham
Simmons, E. H., Worsley
Simmons, Mrs. E. H., Worsley
Simmons, Mrs. E. H., Worsley
Simmons, J. F., Gateshead
Stewart, J., Cheltenham
Smith, Dr. Isobel G., Dublin
Smith, F. L., Hereford
Smith, Mrs. F. L., Hereford
Schoru, E. J., Glasgow
Smith, John, Dublin
Stainer, J. W., Folkestone
Short, F. W., Dawlish
Symonds, Mrs., Ipswich
Symonds, Mrs., Ipswich
Stymonds, Miss, Ipswich
Stiles, P., Market Harborough
Stopforth, F., Cheltenham
Tims, W. N., Cobham
Tims, W. N., Cobham
Thomas, H. W., Glasgow
Tibbett, H. G., Fulham
Todd, J. P., Glasgow
Tedham, Miss H. M., London
Thomson, J., London
Thorpe, A. E., Manchester
Thorpe, Mrs. A. E., Manchester
Tyler, A. T., London
Tocher, G. A., London
Thomson, W. J., Cheltenham
Thomson, Mrs. W. J., Cheltenham
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Twigg, J. G., Withernsea ham Twigg, J. G., Withernsea White, J. A., Shipley White, Mrs. J. A., Shipley Winch, Miss H., Sunderland Wilde, F. H. K., Cheltenham Wilde, Mrs. F. H. K., Cheltenwanee, Mrs. F. H. K., Chelle ham Ware, A. H., Devomport Watson, R. H. L., London Watson, Mrs. R. H. London Walters, J. T., London
Walters, Mrs. J. T., London
Wells, F. G., London
Wells, Mrs. F. G., London
Wolstenholme, W., Chelteuham
Wolstenholme, Mrs. W., Cheltenham Watkins A. Greenwood, Maidenhead Wickham, T. B. C., Cheltenham Wickham, Mrs. T. B. C., Chel-Wickham, Mrs. T. B. C., Cheltenham Williams, D. J., Bath Williams, Mrs. D. J., Bath Williams, Mrs. D. J., Bath Winchester, C. P., Upminster Winchester, Mrs. C. P. Upminster Warren, P. H., St. Albans Warren, Mrs. P. H., St. Albans Wardropper, H., Sunderland Wallis, T. E., London Young, A. E., Leicester



The Conference had a brilliant send-off in the form of a reception in the handsome Town Hall on Monday evening. In the unavoidable absence of the Mayor of Cheltenham, Alderman James Stewart, the veteran pharmacist whose portrait appeared in the C. & D. of June 30, received the guests with the assistance of the president of the Pharmaceutical Society (Mr. Herbert Skinner) and the chairman of the Local Executive Committee (Mr. H. Burton Clark). Dancing set in (if that is the appropriate figure of speech) at an early hour, and in spite of the heat was kept up till late. The spaciousness of the building gave those who were not dancing plenty of room to "circulate" and to hold miniature conferences on their own account. The large attendance probably surprised those who had foretold a relatively small Conference for no other reason than that the town is not a huge centre of population; and the gathering was as representative as it was ample, among those present being some who have not been able to attend Conference meetings for a few years past. A competent orchestra was in evidence, and everyone appeared to be at home.



Photo] [Cleworth Left to Right: Mrs. W. Kirkby, Dr. W. A. Kirkby, Mrs. J. A. Franklin, Mrs. J. Cleworth and Alderman Stewart.

The Conference dinner, held in the Town Hall on Tuesday evening, was an outstanding event in the long and honourable history of similar functions. The guests were received by the chairman and Mrs. Bennett, the Mayoress of Cheltenham (Mrs. Margrett), Alderman James Stewart, Mr. and Mrs. H. Burton Clark, and the president of the Pharmaceutical Society (Mr. Herbert Skinner). Among those who were seated at the chief table were the Mayor and Mayoress of Cheltenham (Alderman and Mrs. C. H. Margrett), the president of the Pharmaceutical Society (Mr. Herbert Skinner), Sir James Agg-Gardner, M.P., Dr. J. H. Garrett, Dr. and Mrs. Howell, Mr. R. Secomb (town clerk), Mr. C. A. Hill and Mr. William Kirkby (past-presidents of the Conference), Mrs. Kirkby, Mr. F. W. Gamble, and Mr. D. Lloyd Howard (past-chairman of the Conference), Mr. F. J. Fitzpatrick (president of the Pharmaceutical Society of Ireland), Mr. A. C. McBride (president of the Pharmaceutical Society of Northern Ireland), Mr. L.

Moreton Parry (vice-president of the Pharmaceutical Society of Great Britain), Dr. F. W. Crossley Holland (treasurer of the Conference), Mrs. Crossley Holland, Dr. C. H. Hampshire (senior general secretary of the Conference), Mrs. Hampshire, Mr. C. E. Corfield (general secretary of the Conference), Mr. H. P. Arthur, Mr. F. H. Carr, Mr. H. Burton Clark, Mr. J. E. French, Mr. T. Guthrie, Dr. Mould, Mr. E. T. Neathercoat, and Mr. E. Saville Peck.

Members of the local branch of the Pharmaceutical Society were in charge of the spur tables, and music, vocal and instrumental, was rendered during the dinner and between the speeches. In proposing the joint toast of "The British Pharmaceutical Conference and the Pharmaceutical Society of Great Britain," Dr. Howell made one of the most legitimately humorous speeches ever heard at a Conference dinner. Those responsible, said Dr. Howell, were holding the Conference in one of the shrines for healing by nature's methods—air, water and music. In the intervals of selling toilet goods, syphons, photographic apparatus and so forth, pharmacists sometimes sold a bottle of medicine. Prescribing and dispensing should have an equal share in the credit of healing. The comfort, digestion and even lives of patients had been preserved with scarcely any acknowledgment from the superior persons who prescribed. Amid peals of laughter, Dr. Howell proceeded to give a lengthy and imaginary prescription, commencing "Ammon. carb. gr. v, tr. camph. co. m. xij," the inference from which was that the patient was an old lady with a sweet tooth, tending to flatulence, with a hacking cough, a swollen leg, a weak heart and so forth. The doctor had prescribed a drug for every symptom—"he will do well; he will thrive like the trees in the Promenade," caustically added the speaker. After a reference to leeches (of which 100,000 had been ordered in a year by one physician) and a survey of medical history, Dr. Howell said kind things about the Conference and the Pharmaceutical Society.

The ovations that greeted Mr. Bennett and Mr. Skinner, who responded for the Conference and the Society respectively, did not surprise those who knew the solid and continued work for pharmacy put in by both these representative pharmacists. Their replies were brief and modest. Mr. Bennett remarked that the Conference has always stood for what is the right, good and proper thing in pharmacy. The chief business of the Conference was to organise and stimulate scientific research, to hold meetings, to publish results, and so forth. The appearance of the new Quarterly Journal was explained by the fact that it was desirable to publish scientific results more than once a year. They were fortunate in having Dr. C. H. Hampshire as editor. It was gratifying that they were able to welcome so many distinguished visitors from Cheltenham and elsewhere.

Mr. Skinner, who followed the chairman, raised an approving cheer with the remark that he was glad to welcome the president of the Pharmaceutical Society of Ireland and the president of the Pharmaceutical Society of Northern Ireland, together with several other visitors from that hospitable country. The way that the pharmacists of Cheltenham had conducted this Conference did them infinite credit. Wherever members of the Conference went, they were developing a corporate sense of pharmacy. It was necessary to come closer together, and to assist medical men in the treatment and prevention of disease.

# Pharmaceutical Conterence 1928

The toast of "The Mayor and Corporation of Cheltenm" was proposed by Mr. E. T. Neathercoat, C.B.E., who associated himself with the chairman in giving a hearty welcome to the Mayor in attending his first British Pharmaceutical Conference. The Conference had another abject in view besides scientific subjects-propaganda on behalf of the Pharmaceutical Society. The object was to make pharmacy known to a wider field. Mr. Neathercoat referred to the pharmaceutical community in Cheltenham, and paid tribute to their services. He expressed thanks b for the reception.

bacTheiMayor, responding, thanked them for their welcome own his return. They, in Cheltenham, realised the importbance of pharmacy, and he paid tribute to the work done by the Pharmaceutical Society in past years.

The toast of "Our Guests" was given by Dr. F. W. Crossley Holland, who said that as a Gloucestershire man he was proud to have been chosen to propose the toast. They were fortunate in having a medical officer of health of the attainments and distinction of Dr. Garrett, Sir James Agg-Gardner had achieved much during his life, and his name was associated with great generosity.

The Rt. Hon. Sir James Agg-Gardner, in his response, said that he had had the good fortune to meet one or two members of the Society in the House of Commons, and he mentioned Sir William Glyn-Jones, who had contributed to the passing of the Insurance Acts.

Start of the Square, and to Mr. D. Lloyd Howard and the president of the Pharmaceutical Society. Giving a few reminiscences of his early training, Dr. Garrett said that when he was connected with "the Square" he brosser. away memories of Theophilus Redwood and Professor Bellifey. School education was at best only a pre-Bentley. liminary education, and the real education was that of occupation. He took both examinations of the Pharmacettical Society, and this education had led him, as it had led many, onwards to further progress. Pharmacets were to be congratulated on their calling. He himself was now in his thirty-seventh year of service as medical officer for Cheltenham. The Conference was a b magnificent body of representative men and women. With this handsome tribute the dinner ended.

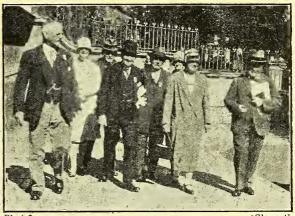
The old saying about gilding refined gold and painting the lily has its application to the work of the Local Executive Committee. To say "Let us invite the Con-ference" is easy: to organise the preparatory work is another matter. The native charm of Cheltenham would have been nullified if the small and efficient band of men and women who formed the various committees had not put their utmost efforts into arranging things. If Conference banquets have of late years tended to "drag their slow length along," the responsibility cannot fairly be charged to local enthusiasts, but must be shared on a broader basis. We have heard unasked-for tributes (in which we concur) to the Local Committee, and we refrain from resisting the librations. from painting the lily.

On Wednesday morning the famous Cathedral of Gloucester was the pièce de résistance. The journey was made by Stroud, and beauties of the Cathedral and the other noteworthy buildings in Gloucester were described by efficient and courteous guides, and in particular by Colonel Waller, M.C., who proved a perfect interpreter of the features of the world-famous Cathedral.

The all-round ability in other arts, besides pharmacy, of members of the Conference was further evidenced on Wednesday. As the guests assembled for luncheon in the Town Hall they were given an organ recital—the organist of the occasion being that many-sided pharmacist, Dr. Crossley Holland.

The entertainment for the ladies was exceptionally well organised, and each item was carried out according to the clock. The first excursion on Tuesday afternoon was to some of the famous villages in the Cotswolds, described so eloquently by Mr. R. Cecil Owen in last week's issue of the C. & D. A reprint of Mr. Owen's article in the form of a booklet was extensively used by ladies—and, sooth to say, several recalcitrant males—who shirked science for sunlight. The sun shone pitilessly, particularly on the heights, but here and there a breeze tempered the heat. A delightful alfresco tea was provided in an out-of-the-way spot near one of the most famous views, and everyone was happy.

One of the paragraphs without which no account of the Cheltenham meeting of the Conference, however brief, would be complete must consist of a tribute to the president and the chairman. Mr. Skinner's mastery of assemblies was never more easily effective than at the two delegates' meetings, and his sturdy optimism was a great factor in steadying opinions and in restraining exuberance. Mr. Bennett, debonair as ever, emerged from the shell, which had enveloped him when he was an official of the Conference, as a fully-fledged chairman, with an added, but not too obvious seriousness. To them the thanks of all present are due.



Cleworth Photo] SOME WELL-KNOWN VISITORS ENTERING THE TOWN HALL.

Several Conference members arrived in Cheltenham on Saturday and Sunday, and among them Dr. and Mrs. Crossley Holland. With his usual bonhomie, Dr. Crossley Holland. With his usual bonhome, Dr. Crossley Holland took the opportunity to make things pleasant all round and give an impetus to the social side by inviting members of the Local Committee to tea on the lawn at the Queen's Hotel. Among those who sipped were Mr. and Mrs. Burton Clark, Mr. and Mrs. Wickham, Mr. and Mrs. Wilde, and Mr. and Mrs. Percy James.

Pitville Park was the rendezvous of Conference visitors at 4 p.m. on Wednesday, July 25, on the occasion of the garden party, which one visitor face-ciously defined as a relic of Victorian barbarism. The sultry affernoon, combined with the mild and relaxing climate of the district, was responsible for the fact that participants "took it easy," and the majority of them found comfort and rest after the more strenuous portion of the Conference programme in lazing in deck chairs or holding minor conferences, while listening to the excellent music dispensed by the military band in attendance, or gazing on the graceful movements of the troup of diaphanous clad nymphs who gave an exhibition of classical dancing in truly pleasant and sylvan surroundings. The official photograph of the Conference was taken as well as a number of unofficial cues. was taken, as well as a number of unofficial ones.

# Japanese Insect Flowers

The production of insect flowers in Japan is the subject of an interesting article in U.S. Commerce Reports of May 14, in the course of which it is stated that one-half of the total production is grown in Hokkaido and the remainder is about equally divided among the four prefectures of Hiroshima, Okayama, Yehime, and Wakayama. Figures for the production of insect flowers in Japan during the 1927 season are not yet available, but for the preceding year were 1,641,514 kwan, or 6,839 short tons. The quality is determined by the percentage of oil which they contain. A guild of insect-flower growers and exporters in Kobe will certify the quality of any lot of flowers and various Government laboratories also make tests. The guild is not recognised by the Government as are many similar organisations. Three types of the Dalmatian flowers are grown in Japan. The first has a small dark-pink flower, blooms profusely, and shows a good harvest; the second has a light-pink flower but blooms in less profusion than the first; and the third has a greenish-white flower of considerably larger size than either of the other two types), but is a much smaller crop. The crop is harvested in the autumn, usually before the plants are in full bloom, since the buds are said to contain more oil than the flowers. It is estimated that over a period of three years, the life of the plant, the yield per tan (one-fourth acre) averages 827 lb. per year. The yield for the three years is in the ratio 1:2:3, the highest occurring in the third year. The crop harvested in Hokkaido is stated to be of the best quality and that in Hiroshima prefecture second.

### LOCAL CONSUMPTION INCREASING YEARLY

The consumption of insect flowers, as well as stems, in Japan during 1927 has been conservatively estimated at 250,000 to 300,000 kwan (1,000 to 1,240 short tons). Domestic manufactures include an insect powder, an incense stick, made of the poorer grades of flowers, and sticks and stems combined with leaves of other plants; a powder incense of similar consistency; and a liquid pyrethrum for spraying.

### SURPLUS AT END OF 1927

The carry over from the 1927 crop was reported to amount to 1,750 short tons. As a result of lower prices, a decline in the production is anticipated in 1928 and the estimate of total available stocks for the year is placed at 7,000 short tons. Practically all of the exports are from Kobe, since the export guild is established in that city. Shipments from Kobe for the first two months of 1928 amounted to 2,901,424 lb., valued at \$763,046. Previous to 1915 only small quantities were exported from Japan. Since then shipments have increased rapidly. In 1925, exports totalled 55,698 piculs, valued at 5,721,236 yen; in 1926, 65,348 piculs, valued at 5,508,104 yen; and in 1927, 68,359 piculs, worth 3,060,739 yen. The United States takes over 90 per cent. of the total exports. The total exports of insect powder amounted to 4,269 piculs in 1925, valued at 455,208 yen; in 1926, 4,093 piculs, valued at 434,604 yen; and in 1927, 8,032 piculs, valued at 490,092 yen. About 40 per cent. of the total exports of powder from Japan goes to China. Kwantung Province, Great Britain, and Australia follow in the order named. In 1924 Japan exported to the United States insect powder valued at 101,000 yen; in 1926, a value of only 10,000 yen.

### LOCAL PRICES

The price of insect flowers in Japan averaged 72 yen per 100 kin in 1924, but declined to 40 yen in 1925 and to 32 yen in 1926. Official figures are not available, but it is stated that the price per pound during 1927 averaged 69 sen, equivalent to 91 yen per 100 kin (132.27 lb.). The present quotation (May) is 58 sen per lb., or 77 yen per 100 kin. The custom of American importers (says the report) in requesting quotations from several houses often gives the impression that there is a greatly increased demand in the United States and causes prices to rise. As stocks of flowers decrease, prices advance, particularly-early in the year before it is known how large an acreage will be planted in the spring, and especially if the demand is brisk.

# Honey Production in Canada

Under the above title an article by C. B. Gooderham, Dominion Apiarist, appears in the issue of "Canada," dated March 10. Frequent references to the honey market have appeared in the C. & D. from time to time, and the recent decision of the Standing Committee under the Merchandise Marks Act, to recommend the marking of imported honey will probably mean that this colonial source of supply will have a still greater share of our trade in the future. This assumption is supported by the most recent statistics.

### [ABSTRACT]

Canada is a wonderful country for bee-keeping, due chiefly to the wide range of flora and high average of favourable weather for the secretion and in-gathering of nectar. The greater part of the honey produced in Canada being white in colour, is most suitable for table use.

Until quite recently, bee-keeping was practically confined to the older Provinces in Eastern Canada, especially Ontario and Quebec, and to British Columbia. The surplus produced by them was absorbed by the Prairie Provinces. During the past five years, however, not only has bee-keeping increased in the East, but it has made a rapid advance in the Middle West, and because of this growth Canadian honey is now being exported to European markets, where it is most favourably regarded. The amount of honey produced throughout the Dominion, of course, varies from year to year, according to weather conditions. For instance, 1925 was a very favourable year in this respect for Eastern Canada, but not so good for the West; while 1926 was just the reverse—good for the West and not so favourable for the East. In comparing 1926 figures with those of 1925 it is seen that, with the exception of Manitoba, the honey crops of the Western Provinces were much larger in the former year.

Reports of the 1927 crop so far received show that in

Western Canada the past season was even more favourable than 1926. Manitoba reports a crop of 7,386,575 lb., British Columbia 986,719 lb., and Saskatchewan 500,974 lb. Crop reports from the other Provinces for 1927 are not yet available.

Comparatively few bees are as yet kept in the Provinces of Prince Edward Island, Nova Scotia, and New Brunswick, but these Provinces contain large areas suitable for honey production. Greater interest is now being shown in this industry, the demand for bees is increasing, and larger apiaries are being maintained. In most localities in these Provinces, colony production is quite good, in some seasons running well over 100 lb. per colony. While honey production is steadily increasing throughout the Dominion, there are large areas yet unexploited in so far as bee-keeping is concerned; this is especially true of the Western Provinces. The changing farming conditions in the more settled parts of the Prairie Provinces, the opening up of new territory, and the introduction of irrigation into semi-arid areas are having an effect on bee-keeping possibilities. For instance, the introduction of sweet clover into Manitoba and Saskatchewan is largely responsible for the increase in bee-keeping in these two Provinces. In the Peace River district, where bee-keeping is a comparatively new industry; an experimental apiary at Beaverlodge, Alberta, gave a wonderful crop during the summer of 1926. A colony on scales registered a gain of 20 lb. per 24 hours on more than one occasion, and at the end of the season this colony gave 281.5 lb. of surplus honey, in addition to showing one colony increase. Other pioneer apiaries reported equally good results. In Ontario and Quebec, the older parts of the Provinces are fairly well stocked with bees, but the newer parts offer what is practically an undeveloped field.

TELEPHONE DELIVERY SERVICE.—M. Rogerson & Son, Ltd., chemists, Bradford, are making a speciality of their daily telephone delivery service to all parts of the district, with provision for urgent goods by special messenger, and an offer to send a selection of goods from which the customer may make a choice at home. The service is run in association with a credit account system.

Trade Report

The prices given in this section are those obtained by importers or manufacturers for bulk quantities or original packages. To these prices various charges have to be added, whereby values are in many instances greatly augmented before wholesale dealers receive the goods after which much expense may be incurred in garbling, packing, etc. Gualities of chemicals, drugs, essential and fixed oils, and many other commodities vary greatly, and higher prices than those here quoted even in bulk quantities.

### 42 Cannon Street, E.C.4, July 26

Business in the produce markets is reduced to a minimum now that the holiday season is in full swing. Interest in crude drugs has centred in the auction held to-day, while in the private market, menthol and Japanese peppermint oil still command attention, and prices of both products are firm and dearer. There appears to be an actual spot shortage of menthol and little afloat. Sudan acacia gums have further advanced. Pepper is easier, as is not unusual at this period of the year, Chillies and capsicums are also cheaper. Cloves and West African ginger are firmer. There are a number of alterations in the essential oil market, where more business is being done. Lemon and Japanese dementholised peppermint are higher, with palmarosa and West Indian lime firmer. Cinnamon leaf, for shipment, and wormseed are easier, while orange and American peppermint are again lower. Among the pharmaceutical chemicals business continues limited, with several important reductions. Bromides are easier, and the same applies to sodium salicylate, phenazone, phenacetin, resorcin and acetamilide. tions. Bromides are easier, and the same applies to sodium salicylate, phenazone, phenacetin, resorein and acetanilide. Vanillin is firm owing to the increase of price of cloves, but so far no decided change has been made by makers. Lanoline is dearer. Among the industrial chemicals trading has been quiet throughout, with several items easier on quotation, these including ammonium chloride and sal ammeniae. In the coal tar products, carbolic acid crystals are about steady, the demand being limited. Creosote oil and 'prich' are cheaper. In the vegetable group of oils, with quiet business a number of products have eased. Castor, coconut, linseed, palm oils and turpentine have all declined; cotton is very irregular; soya and rape are very quiet.

### Crude Drugs, etc.

Crude Drugs, etc.

AGAR AGAR is steady, Kobé No. 1 offering at 4s. per lb. on the spot, and to arrive 3s. 10½d. c.i.f. is quoted.

ALQSS.—The exports from the Union of South Africa during March amounted to 45,798 lb. (£390), against 65,171 lb. (£384) in March 1927. During the three months ended March 31 the exports were 201,427 lb. (£1.661), against 165,960 lb. (£1,115) for the same period in 1927.

ANTIMONY is still dull and Chinese regulus on the spot is no better than £39 5s., with sellers thereat. C.i.f. terms for shipment are about £30 10s. English high-grade regulus is still-called £59 10s. to £60, but good brands can be got at £58aa. There is practically no interest in Chinese crude, which is quoted at £33 to £34 on the spot.

BALSAN TOLU is firm at 3s. 10d. per lb. on the spot.

BUCHU.—The exports from the Union of South Africa during March amounted to 24,404 lb. (£1,002), against 20,402 lb. (£780) in March 1927. During the three months ended March 31 the exports were 59,980 lb. (£2,512), against 52,912 lb. (£2,144) for the same period in 1927.

Cadatum is strong, there being a ready demand for anything available on the arch with the spot and the second of the spot things available on the arch with the spot and the spot archive available on the arch with the spot and the spot archive available on the archive archive.

ONDITION (£2,144) for the same period in 1921.

CADMIUM is strong, there being a ready demand for anything available on the spot, with parcels commanding a premium of as much as 6d, per lb. on the basis of 3s, per lb., although offers are made at about 2s, 5d, to 2s, 6d, for forward arrival.

CALUMBA remains firm. Fair natural, clean sorts offer at 30s, per cwt., ordinary dusty at 27s, 6d., and ordinary washed at 37s, 6d.; fine washed varies from 60s, to 65s, per

CHILLIES have been easier of late, with Zanzibar and Mombasa offering at 150s, per cwt. and at 130s, c.i.f. Japanese is 120s, to 130s, spot. Capsicums offer at from 65s, to 72s, 6d, for Nyasaland.

CLOVES.—Zanzibar are firm at from 113d, to 1s, per 1b, on the court of the court

CLOVES.—Zanzibar are firm at from 11½d, to 1s, per lb, on the spot, which prices have been paid. Sales to arrive include August-October shipment at 11½d, to 1s, 0½d, c.i.f., October-December at 11½d, c.i.f., and November-January at 11½d, c.i.f. The landings of Zanzibar in London during the week ending July 21 were 50 bales and the deliveries 871, leaving a stock of 7,286, against 12,161 in 1927 and 13,026 in 1926. The landings from January 1 to July 21 have been 12,030, against 14,958 in 1927, and the deliveries 14,125, against 10,400 in 1927. 10.400 in 1927.

COCOA BUTTER.—Prime English C.F.R. is 1s. 83d, p and other makes 1s. 8d. in not less than one-ton lots.

COD-LIVER OIL.—There is still a fair inquiry for autumn shipment, and a certain amount of business has been done, but it would appear that most buyers are carrying small stocks. Prices vary according to seller from 164s. to 167s. 6d. per barrel c.i.f., for finest new Lofoten non-freezing

1678, 6d. per barrel c.i.f., for finest new Lofoten non-freezing steam-refined quality.

Bergen, July 23.—No alteration has taken place on this market. Non-freezing steam-refined is still quoted at 165s, per barrel, c.i.f. London. The orders are limited

CORN PRODUCTS. ETC.—Guaranteed water-white glucose (corn syrup) is 23s, per cwt. delivery to end of July ex store, London. Dutch maize starch powder (cornflour) is 16s, per cwt. on the spot. American is 16s, 9d, per cwt., ex store, London. Pearl starch is 16s. 3d., delivery to end of August, ex store, London. Dutch maize starch crystals is 22s, on the spot, and American is 20s., ex store, London, delivery to end of August. Dutch dextrin is quoted at 21s. to 26s, per cwt. on the spot as to quality. American canary is 20s. 7½d, per cwt. White is 20s. 4½d., ex store, London, delivery to end of August. Dutch farina is 16s, 9d, per cwt. on the spot and for shipment 15s. 9d. per cwt. f.o.b, is quoted.

Ergor remains quiet, with Russian and/or Polish old crop offering on the spot at from 2s. 6d. to 2s. 7d.; some new crop Spanish has been sold at 4s. 3d. c.i.f., but higher prices are now wanted.

are now wanted.

GINGER.—West African is-firm, with spot sales at 55s. per cwt, and to arrive sellers quote 53s. c.i.f.
GRINDELIA ROBUSTA.—The spot price is 53d. per lb.. and

not as quoted last week, GUM ACACIA.—Sudan is dearer both for sorts and bleached. Natural Kordofan sorts is now 44s. spot, and to arrive 44s. c.i.f. Cleaned on the spot is 46s., and to arrive 45s. 6d. c.i.f. is quoted. Bleached is now 85s. to 90s. as to quality, and grains 75s. per cwt.

MENTHOL has been in active demand on spot owing to the statement of the statement

actual shortage and little near at hand. Sales of Kobayashi-Suzuki have been made at from 19s. to 21s, per lb. on the spot. To arrive, 21s, c.i.f. has been paid for July-August shipment, and 21s, c.i.f. is quoted for practically any position

forward.

Mercury is unsettled, and although in some quarters spot quotations are still named at comparatively high figures, the nearest value of spot lots ranges from £20 5s. to £20 7s. 6d. nearest value of spot lots ranges from £20 5s, to £20 1s. Od. per bottle, less the customary discount. Demand is certainly poor and there is practically no inquiry from the Eastern markets. There is no reliable first-hand quotation available; in fact, producers are not quoting, and the negotiation of new business on f.o.b. terms is in abeyance. Reports from America state that the market is dull, the New York price being at about £20 duty paid being at about \$120, duty paid.

MAGNESIUM is firm, with home makers' prices ranging from 4s. to 4s. 3d. per lb. for small ingots and sticks, and terms for powder vary from 5s. 6d. to 6s. 6d. per lb., according to

quality and quantity.

OPIUM.—The following report has been received from

CONSTANTINOPLE, July 15.—Sales during the past fortnight amounted to 36 cases druggists' for export, while speculators purchased almost double that quantity. The European demand is almost nil. Arrivals have been 505 cases druggists', 4 cases "softs" and 5 cases Malatia, making a total of 514 cases, against 320 last year. Stocks are now 970 cases druggists', 115 "softs" and 84 Malatia, a total of 1,169 against 784 cases for the same negind last year.

same period last year.

PEPPER is easier in view of the reported estimates of the Peper is easier in view of the reported estimates of the new erop production, and until more definite figures arrive as to its size this easier position is likely to prevail. Fair black Singapore on the spot is 1s. 5½d. per lb., and August-October shipment 1s. 1½d. c.i.f. Lampong is 1s. 4½d. spot, and August-October shipment has been sold at 1s. 1½d. to 1s. 1d. c.i.f. Tellicherry is 1s. 5½d. spot, and Alleppy 1s. 5½d. spot. White Muntok is quict at 2s. 1½d. spot, and to arrive the sales include May-July shipment at 1s, 10\frac{1}{4}d, c.i.f. and August-October shipment at 1s, 0\frac{1}{2}d, to 1s, 9d, c.i.f. PIMENTO is quiet at 8\frac{1}{4}d, per lb. on the spot, and for August-October shipment 70s, per cwt. c.i.f. is quoted. Seeds.—Anise.—Spanish is 50s., Levant 34s., and Russian

August-October shipment 70s. per cwt. c.i.f. is quoted.

Seeds.—Anise.—Spanish is 50s., Levant 34s., and Russian 28s. per cwt. Canary is firm, with a little more inquiry for Mazagan; spot at 16s.; July-August shipment is offering at 16s. Saffi still remains at 15s. 6d. on spot and 15s. 6d. for forward shipments. Cumin is quiet: Maltese is 54s. spot, and for July-August shipment 44s. c.i.f. is quoted; Morocco is 45s. spot and 44s. c.i.f. for July-August. Coriander.—
There is no demand for Morocco on spot at 25s.; July-August shipments the price is 21s.; Russian is now offered at 25s. spot. Fenugree.—Morocco is 16s. spot, and new crop is still offered at 13s. 6d. c.i.f. for July-August shipment. Head.—Marchurian: the spot price is 19s. per cwt. Linseed.—Maragan is 21s. on the spot, and new crop for July-August 18s. 6d. c.i.f. Mustard.—English on spot is 27s. per cwt.

Senega.—There are sellers of the new crop on the spot at 5s. per lb., which is regarded as a reasonable figure in view of the cost of collection and the fact that there is no carry-over. To arrive, the price varies from about 4s. 6d. to 4s. 7d. c.i.f. according to position. The "Beaverdale" from Montreal has brought 30 bales.

Shellac has been irregular, usual standard TN orange quality on spot closing at 230s. per cwt.; fine orange is 25s. to 330s., pure button 25ss., and AC cakey to 240s. per cwt. To arrive, TN for June-July shipment has been sold at 202s. 6d. to 203s. 6d., and July-August at 206s. 6d. to 220s. c.i.f., with sellers at 207s. 6d. c.i.f. Sales for delivery include August at 215s. to 220s., October at 210s. to 220s. to 215s., and December at 207s. 6d. c.i.f. Sales for delivery include August at 215s. to 220s., October at 210s. to 220s. to 215s., and December at 207s. 6d. to 220s. to 210s.

Turmeric.—Fair Madras finger is firm at 40s. per cwt. on the spot, and for October-December shipment 43s. 6d. c.i.f. is quoted.

Wax (Vegetable).—Japanese is dull at 82s. 6d. per cwt.

is quoted.

WAX (VEGETABLE).—Japanese is dull at 82s. 6d. per cwt. on the spot, and for shipment 77s. 6d. c.i.f. is quoted.

### Essential Oils

RENEWED interest in Sicilian lemon and speculation on news of a short perpermint crop in Japan have caused advances which, particularly in the case of Japanese dementholised, is creating much excitement. Palmarosa and lime are firmer, cinnamon leaf and wormseed easier, with orange and American peppermint still further reduced. More business

Anise (STAR)—"Red Ship" is a little firmer for shipment

ANSE (SIAR)—Red Sinf) is a interminer for simplent at 2s. 14d. per lb. c.i.f., in drums, and 2s. 12d. in tins. The spot price is about 2s. 4d. per lb.

BERGAMOT is unchanged at 22s. 6d. per lb. c.i.f. and 23s. on the spot for 37-38 per cent. l.a.

CAJUPUT is firm at 2s. 8d. to 2s. 9d. per lb. on the spot, as

to quantity.

CASSIA is available on the spot at 6s. 9d. per lb. for 80-85 per cent. c.a. guaranteed free from alcohol, and is quoted at 5s. 3d. to 5s. 6d. per lb. c.i.f.
CEDARLELS is firm at 5s. 9d. per lb. c.i.f., and from 6s. to

3d. on the spot.

CEDARWOOD is quoted at 1s. 2d. per lb. on the spot, in drums, and 1s. 3½d. in cases.

CINNAMON LEAF.—Ceylon is easier at 4s. 10d. per lb. c.i.f.

in drums.

CITRONELLA.—Ceylon has been quoted at 1s. 64d. per lb. c.i.f., but spot holders maintain their price round about 2s.

c.i.f., but spot holders maintain their price round about 2s. nominal, owing to the prevailing scarcity, Java is on the easy side at 1s. 10½d. per lb. on the spot and 1s. 9½d. c.i.f. CLOVE.—English distilled continues firm at 7s. per lb. CERANIUM.—Bourbon is unchanged at 18s. 6d. per lb. on the spot. Algerian is called 14s. 6d. spot.

GINGERGRASS is rather weak at 8s. per lb. on the spot and 7s. 9d. per lb. of f

7s. 9d. per lb. c.i.f. LAVENDER is firm at 14s. 6d. per lb. on the spot for French,

LAVENDER is firm at 14s. 6d. per lb. on the spot for French, 38-40 per cent.

LEMON is higher again, following cables of firmness in Italy. This is in agreement with the anticipation of fully a month ago, although in the interval a falling off was experienced. The most recent demands for shipment are 13s. to 13s. 3d. per lb. c.i.f. Second-hand parcels are selling on the spot at 12s. 9d. to 13s. per lb.

LEMONGRASS is on the easy side at 3s. 3d. per lb. on the spot and 3s. 1d. per lb. c.i.f.

LIME.—West Indian distilled is firmer at 24s. 6d. to 25s. on the spot.

the spot.

MANDARIN is scarce at the source and the spot price of

NEROLI.—Italian is quoted at 70s, per oz. Fair French Bigarade is worth about 34s., while a really good quality would probably fetch 40s. per oz.

Orange.—Competitive shading of prices continues, and there are now numerous offers of Sicilian sweet on the spot at 25s. to 27s. per lb. For good quality West Indian 27s.

per lb. is still asked, though poorer quality may be had at

PALMAROSA is firm at 12s. to 12s. 6d. per lb. on the spot. PATCHOULL.—The market is weak, and though the price is maintained in more than one direction, it is possible to buy genuine Singapore quality at 23s. per lb. on the spot in

PEPPERMINI.—Japanese dementholised is dearer, spot closing at 8s. per lb. for Kobayashi and/or Suzuki. A fair amount of business is reported for forward shipment, with October-December offering at 7s. 6d. per lb. c.i.f. American natural tin oil is weaker at about 13s. per lb. on the spot, and new crop is now offered at 12s. 6d. per lb. c.i.f., in cases. An offer of 12s. made during the week was turned down. Ukranian is quoted at 10s. to 10s. 6d. per lb. on the spot, according to quantity.

SPEARMINT is quoted at 19s. 3d. per lb. on the spot.

WORMSEED, owing to the continued weakening in the primary market, is again easier, and is now quoted at 11s. per lb. c.i.f. The spot value is about 12s. 3d. to 12s. 6d. per lb.

WORMWOOD is very scarce all round, and it is reported that supplies of the old crop are exhausted. The spot value

is 42s, per lb.

The following arrivals have taken place from the countries The following arrivals have taken place from the countries indicated during the period July 18 to July 24 (inclusive): Almond (Fr.), 5 cs.; apricot (Fr.), 10 cs. bergamot (It.). 16 cs.; camphor (Jp.), 53 cs.; cinnamon (Cey.), 2 dm.; citronella (Ger.) 1 dm., (Jv.) 8 dm.; copaiba (U.S.), 2 cs.; eucalyptus (Aust.) 6 dm. 40 cs., (Sp.) 4 dm.; geranium (Fr.). 1 dm.; lavender (Fr.), 6 cs. 2 dm; lemon (It.) 126 cs., (U.S.) 3 cs.; lemongrass (Fr.) 4 cs., (Pan.) 1 dm.; orange (B.W.I.) 3 cs., (Sp.) 2 cs., (It.) 17 cs.; pennyroyal (Sp.) 1 dm.; peppermint (Jp.), 10 cs.; rosemary (Sp.), 1 dm.; sandalwood (Ger.) 20 cs.; sassafras (U.S.), 4 cs.; undescribed (It.) 3 cs., (Fr.) 13 cs., (Ger.) 7 cs.

### Pharmaceutical Chemicals, etc.

One or two changes of importance are recorded this week, the chief being reductions in values of bromides, sodium salicylate and phenazone. A few other products are being cut, including phenacetin, resorcin and acetanilide. Business has been very limited.

ness has been very limited,

ACETANILIDE continues to be quoted on spot from 1s. 5d. to

1s. 5dd. per lb. for B.P. crystals and powder; market quiet.

AMIDOPYRIN is steady, and in some quarters there is a
shortage: spot, 7s. 9d. to 8s. per lb.

ASPIRIN.—The home make prices of 2s. 6d. to 2s. 8d. per
lb. are being obtained in most quarters, but it seems that
a small amount of old second-hand stuff has been changing hands at less than these rates.

BARBITONE continues to be quoted on spot at 5s. 8d. to 5s. 9d. per lb., with very little interest shown.

DENTALDEHYDE is steady, with f.f.c. at 1s. 11d. per lb. for quantities in carboys; small parcels, 2s. 1d.

BENZOLC ACID (B.P.) is steady, but there is no important business: quantities, ex works, 2s. per lb.; small parcels.

2s. 1d. to 2s. 2d. per lb.

BENZONAPHTHOL is unchanged on a dull market: 2s. 10d.

BENZONAPHTHOL is unchanged on a dull market: 2s. 10d. per lb. for five-kilo, parcels.

BISMUTH SALTS.—Prices for minimum cwt. lots are unchanged: carbonate, 9s. 9d.; subnitrate, 8s. 3d. per lb.

BROMDES are rather easier; dealers' prices show some reduction, and makers are generally willing to meet competition in order to secure business, their list prices being cut. Dealers: ammonium, about 1s. 11d.; potassium, B.P. crystals, about 1s. 7½d.; granular, 1s. 7d.; codium, B.P. 1s. 10d. per lb. for quantities in cases. British makers' list prices are stated to be as follows, but they are being shaded to meet competition when necessary: ammonium. 2s. 3d.: prices are stated to be as follows, but they are being shaded to meet competition when necessary: ammonium, 2s. 3d.: potassium, crystals, 1s. 11½d.; granular, 1s. 11½d.; sodium. 2s. 2d. In the minimum lots of one cwt., ammonium is 2s., sodium 1s. 11d.; potassium, crystals, 1s 8¾d., granular 1s. 8¼d.; five-cwt. lots are ½d. per 1b. cheaper than the one-cwt. price, and ton lots are ½d. cheaper than the five-cwt.

lots.
CACIUM LACTATE is steady on a sluggish market: quantities from 1s. 1½d. per lb.
CHLORAL HYDRATE.—Duty-paid crystals are steady at from 3s. 1½d. to 3s. 3d. per lb., as to quantity.
CITRIC ACID (B.P. crystals) has remained quiet, but prices are being fairly well maintained on spot at about 1s. 10d. to 1s. 10¾d. per lb., less 5 per cent. for quantities of foreign.
CREOSOTE (B.P.) is unchanged on a quiet market at 1s. 8d. per lb. for fair quantities.
CREOSOTE CARRONATE continues steady with a moderate busi-

CREOSOTE CARBONATE continues steady with a moderate business: quoted from 5s. 10d. to 6s. per lb.
GUATACOL CARBONATE remains quiet, with spot offers at about 4s. 6d. to 4s. 8d. per lb.
HEXAMINE.—A steady business has been done on a competitive market, which is occasionally shaded for important

ls. 11½d. per lb. for quantities; cwt. lots or less would be slightly more.

HYDROQUINONE continues steady on a fairly busy market: 3s. 72d. for half-ton lots up to 4s. 6d. per lb. for 7-lb. parcels.

ISOEUGENOL, in sympathy with the recent advance in cloves, is now quoted at 15s. per lb. on the spot.

LACTIC ACID is bright, with the agreed prices steady at 1s. 11d. to 2s. 2d. per lb., as to quantity.

MANOLINE is dearer at 51d, to 6d, per lb, for B.P. anhy.

drous, as to quantity,

METHYL SALICYLATE (B.P.) is difficult to move at the quoted

rates of 1s. 44d. to 1s. 6d. per lb., as to quantity.

METHYL SULPHONAL remains slow of sale, with spot material offered from about 8s. 9d. per lb.

PARAFORMALDEHYDE is steady, with quantities in kegs at 1s. 8d.; small parcels, 1s. 82d. to 1s. 9d. per lb.

PARALDEHYDE is steady but quiet: quantities in carboys, 1s. 1d.; small lots in bottles, 1s. 3d. per lb.

PHENACETIN is slightly easier, with cwt. lots now moving at 2s. 4d., and slightly less would be taken for five owts. or more; small parcels, about 2s. 5d. to 2s. 6d. per lb.

PHENAZONE has been cut very severely, and cwt. lots are now selling down to 3s. 9d. per lb. and a trifle less for large quantities; small parcels, 3s. 10d. to 3s. 11d.

PHENOLPHTHALEIN is steady under controlled prices of 5s, 11d, to 6s, 1½d, per lb, as to quantity; business limited.

POTASSIUM PERMANGANATE (B.P.) is very steady as quoted at 5½d, per lb, ex store; business very slow.

RESORCIN is being cut as quoted at 3s, to 3s, 1d, per lb.

as to quantity.

SALICYLIC ACID (B.P.) is moving steadily at the new rates of

1s. 3d. to 1s. 6d. per lb. as to quantity.

SMOL is controlled at unchanged prices: two-cwt., 2s. 3d.; one-cwt., 2s. 4½d.; half-cwt., 2s. 5½d.; small parcels, 2s. 6d.

SODIUM BENZOATE (B.P.) continues to meet with a fair business, with prices steady: quantities of foreign powder, ls. 73d, per lb. in two-cwt. barrels; small parcels from 1s. 8d. with a fair

SODIUM DIETHYLBARBITURATE continues dull: spot, 7s. 10d.

to Bs. per lb.

week: cwt. lots are now offered at: crystals, 1s.  $7\frac{1}{2}$ d.; powder, 1s.  $6\frac{1}{2}$ d. per lb., in cases; slightly less for five cwt. or more.

SELPHONAL is steady on a quiet market: spot, 6s. 6d. to

6s. 9d. per lb.

TANNIC ACID.—B.P. leviss. in quantities, is steady at 3s. per lb.; small parcels, about 3s. 3d. per lb.

TARTARIC ACID (B.P. crystals).—There has been no material improvement in demand, although conditions have been a little better, and the market is fairly steady as quoted at from 1s. 4d. to 1s. 4d. per lb., less 5 per cent., for quantities of foreign.

TERPIN HYDRATE is slow of sale: quantities to come for-

ward, Is. 5d. to 1s. 6d. per lb.

THYMOL is steady but quiet: cwt. lots of synthetic fine

white, 9s. 6d. per lb.

VANILLIN is steady, although in poor demand: cwt. lots of 100 per cent, from cloves 15s, 3d, to 15s, 6d, per lb.

### Industrial Chemicals, etc.

London, July 25.

BUSINESS has been very quiet throughout the heavy chemical market. One or two items are slightly easier on quotation.

ACETIC ACID continues in poor demand, while prices are steady: 80 per cent. technical, £36 15s.: 80 per cent. pure. £37 per ton, in barrels; glacial, pharmaceutical, 99 to 100 per cent., £66, in glass demijohns; glacial, in barrels, £56 per ton, ex store. per ton, ex store.

ACETONE.—B.G.S. is well held at controlled prices: B.G.S..

264 to £67 per ton, in drums, ex store.

ALUM continues in limited demand, with prices for lump on spot about £8 5s. to £8 7s. 6d. per ton, in casks, ex store; slightly less forward.

AMMONIA (ANHYDROUS) continues to meet with a steady demand on spot for small quantities: quoted from 9d. to 11d. per lb., in loaned cylinders, carriage paid; slightly less

AMMONIUM CHLORIDE is slightly easier and very quiet:
dealers now quote quantities of grey galvanising down to
£21 to £21 5s. per ton, in casks, ex store; slightly less for

ARSENIC.—The trade demand is quiet and quotations for white Cornish 99 per cent. range from about £16 15s. to £17 f. o.f. mines. Business has been confined to small lots. f.o.r. mines.

Mexican high-grade is quoted £17 5s. c.i.f. Liverpool, but business is virtually impossible at this figure.

BARIUM CHLORIDE is very steady and business has been fairly good: 98 to 100 per cent. prime white crystals, £9 to £9 7s. 6d. per ton, in casks, ex store; lowest quotations from the Continent for quantities to come forward 2771364. the Continent for quantities to come forward, £7 13s. 6d. per ton, f.o.b.

BLEACHING POWDER is a competitive market: quoted from £5 12s. 6d. to £7 per ton for 35 to 37 per cent. available chlorine, carriage paid.

BORAX PRODUCTS. - Unsettled conditions continue in these

COPPER SULPHATE. - There is not much doing, but prices are well held, with casks f.o.b. for export at £26 to £26 15s CREAM OF TARFAR.—The quoted prices for foreign 99 to 100 per cent, powder continue at about 96s. to 97s. 6d. per cwt., less 2½ per cent., but for any good-sized business a lower figure would be taken in most quarters.

FORMALDEHYDE is steady, although there is not much business moving at the moment: 40 per cent. by volume, £37 per tent.

ton, in casks, ex store.

FORMIC ACID is quiet: 85 per cent., £46 5s. to £46 12s. 6d.

per ton, in carboys, ex store.

ISOPROPYL ALCOHOL continues to be offered at competitive prices with business fair in small quantities: reliable make, 10s. to 10s. 6d. per gallon, in drums, carriage paid.

Oxalic acid is steady but quiet: quantities are quoted from £29 15s. to £30 per ton, ex wharf.

POTASH CAUSTIC continues generally quiet: convention prices are unchanged: spot, less than one ton, £36 15s.; one to five tons, £33 5s.; five to fifteen tons, £32 15s. per ton, in drums, ex store, for 88 to 92 per cent. solid; c.i.f. prices 30s. per ton less in all cases.

POTASSIUM CHLORATE has been very slow: quantities to arrive from 27d. to 3d. per lb., ex wharf; small spot parcels,

3<sup>1</sup><sub>4</sub>d. per lb., ex store.

POTASSIUM PERMANGANATE is steady but the demand poor: commercial quality, in two-cwt. drums,  $5_{10}^{1}$ d. per lb. ex store. Potassium prussiate is unchanged at the recently revised rates: yellow, £63 10s. to £65 10s. per ton, in casks, ex store; single casks, 7d.; small parcels,  $7_{20}^{1}$ d. ex store. Sal ammoniae is easier with the market very quiet: dog-tooth crystals, about £29; medium, about £28; fine white crystals, £18 per ton, in casks, ex store, for quantities; con-

£18 per ton, in casks, ex store, for quantities; contracts slightly less.

SODIUM ACETATE remains dull, with spot available at about

£20 5s. per fon, in casks, ex store.

SODIUM CHLORATE is quiet: quantities to arrive from 23d. to 27d. per lb., ex wharf; small spot parcels, 3d. to 38d. per lb . ex store.

SODIUM HYPOSULPHITE is steady with a fair business moving: dealers quote pea crystals, in one-cwt. kegs, £15 to £15 2s. 6d.; commercial quality, £9 10s per ton, in casks, ex store. British makers' price for pea crystals to home consumers on contract, £15 per ton, carriage paid to buyer's station.

SODIUM PRUSSIATE is steady but quiet: quantities from 43d.; small parcels, 5d. to 54d. per lb., ex store.

SODIUM SULPHIDE is very slow: 60 to 62 per cent. solid, £9 10s.; broken, £10 5s. per ton, in drums, ex wharf.

SULPHUR is very steady, but importers' prices are unchanged, being on the basis of £5 12s, 6d. to £5 17s. 6d. for American crude, and Sicilian flowers stand at £12 7s. 6d., refined ground at £11, and roll at £9 15s.. all c.i.f. to arrive.

COAL-TAR PRODUCTS, ETC.—Generally quiet market continue in this section. Carbolic acid crystals are easy as quoted. Pitch continues to decline on next season's quotation. in this section. Carbolic acid crystals are easy as quoted. Pitch continues to decline on next season's quotation. Creosote oil is cheaper. ANILINE OIL is steady with a moderate business: in quantities, from 8d. per lb., packages extra. carriage paid. ANILINE SALT is unchanged at from 8d. per lb., packages extra, carriage paid. Betanaphthol. is fairly bright: quantities at about 10d. per lb., carriage paid. Carbolic acid crystals are easy as quoted for quantities of five tons for export at about 6½d. per lb., f.o.b.. in drums with over-casks; crude 60's, about 2s. 2d. per gallon, naked at works. Creosote oil is a good deal easier with the market rather slack: ex works, 6½d.; f.o.b.. 8d, per gallon, in bulk quantities. Cresylic acid is steady and without change. Naphthalene is very slow: dealers quote flakes and balls. to arrive, £16 5s. per ton, in cases: home makers, flakes, about £14 per ton, in quantities. Methyl altohol. Is moving fairly well at steady prices: spot, about £45 per ton, in drums, ex store: cheaper prices for quantities to come forward. Pyridine remains neglected: nominal quotation at about 5s. per gallon, f.o.b. Toltol is fairly steady: commercial 90's, about 1s. 7d.; pure, about 1s. 10d. per gallon at works. Xylol remains slack: commercial, about 1s. 6d.; pure, about 1s. 9d. per gallon. in quantities at further cut at 55s. per ton, f.o.b. East Coast.

### Fixed Oils, etc.

Fixed Oils, etc.

Business has been quiet in most directions. Prices of a number of products are cheaper, principally in castor, linseed and palm oils. American turpentine is also cheaper. ACID OILS are quiet but steady: coconut and/or palm kernel, 39s.; ground nut, 31s. 6d.; soya, 28s. spot. Castor.—Prices for all grades are easier, with the market dull: pharmaceutical, 50s.; first pressings, 45s.; second pressings, 42s. spot, in barrels, in not less than one-ton lots. Coconut is quiet and slightly easier: deodorised, spot, 47s. 6d.; Ceylon, 39s. 6d. c.i.f.; Cochin, 53s. 9d. c.i.f. Cotton is dull and very irregular: deodorised, about 42s. 6d.; common edible, 40s.; soap-making, 37s.; crude, 35s. spot. Ground nut has been dull, deadorised, spot, 47s.; crude Oriental, 41s. c.i.f. 39s. 6d. c.i.f.; Cochin, 53s. 9d. c.i.f. Cotton is dull and very irregular: deodorised, about 42s. 6d.; common edible, 40s.; soap-making, 37s.; crude, 35s. spot. Ground Nut has been dull: deodorised, spot, 47s.; crude Oriental, 41s. c.i.f. Palm Kernel continues quiet: refined is about 44s. and crude 41s per cwt. spot. Palm.—Business has been slow all the week and prices have declined: Lagos, 34s. 3d.; softs, 33s. 7½d.; mediums, 34s. 9d.; hards, 35s. 6d.; bleached, 36s. 3d. spot. Rape is unchanged and quiet: refined, 45s. 6d.; crude, 43s. 6d. spot. Soya remains very quiet: deodorised, 40s.; crude, 35s. spot. Linseed (raw, naked) shows a big drop in values with some recovery at the close: on spot, 28s. 9d.; July, 27s. 9d.; August, 27s. 9d.; September-December, 28s. 3d.; January-April, 28s. 9d.; boiled oil, spot, 32s. 9d.; Hull, on spot, 28s.; July, 28s. 1½d.; September-December, 28s. 3d. Turpentine.—There has been a further drooping tendency at this end, although reports from America were fairly steady under the influence of reduced receipts from the South. Spot closes at 43s. 3d.; August, 43s. 6d.; September-December, 44s. 3d. London deliveries for last week were smaller at 1,686 barrels, making a total since January 1 of 60.810 barrels, compared with 75,713 barrels for the same period last year. Stocks were returned at 23,694 barrels, against 26,776 barrels a year ago. Including the landings and afloats, the London visible supply makes up at 28 241 barrels, against 34,297 barrels the same date last year. There has been a firmer tendency in Resin. Due to more restricted receipts from America and also the loss of a considerable quantity through a steamer afire at Hamburg. C.i.f. terms for shipment from America were as follows: B/D 19s. 9d. to 20s., E 20s. 4½d., F/H 20s. 4½d., I/M 20s. 6d., considerable quantity through a steamer afire at Hamburg. C.i.f. terms for shipment from America were as follows: B/D 19s. 9d. to 20s., E 20s. 4½d., F/H 20s. 4½d., I/M 20s. 6d., W.G. 23s., and W.W. quality 24s. Terms ex wharf command 9d. per cwt. premium. Wood.—Hankow, in barrels, remains dull: spot is offered at 76s. per cwt.

Lubricating, Mineral and Burning oils, etc.—There is little charge to company them.

Lubricating, Mineral and Burning oils, etc.—There is little change to comment upon. Business remains slow in most directions, while prices are about level on the week. Benzol is steady, with a fair business: crude 65 s, 11½d.; standard motor, Is. 4d.; pure, Is. 9d. to Is. 9½d. per gallon, ex works, in tank wagons. Fuel oil is quict and quoted prices are unchanged: 950 gravity, £3 10s.; 890 gravity, £4 2s. 6d. per ton, ex tank; slightly cheaper forward. Paraffin wax and Scale.—Wax continues firm at from 25/6d. to 4½d. per Ib., according to melting point, in bags; scale is steady for shipment at about £22 per ton, c.i.f. U.K. port. Paraffin oils are unchanged: American standard white, 10½d.; water-white, 11½d. per gallon, barrels free, ex wharf; Roumanian kerosene, water-white, 4¾d. per gallon, ex tank. 10½d.; water-white, 11½d. per gallon, barrels free, ex wharf; Roumanian kerosene, water-white, 4¾d. per gallon, ex tank. White oils continue steady with business limited: special No. 1, £23 15s.; No. 1, £23 2s. 6d.; No. 3 half-white, £20 10s.; No. 4 half-white, £19 10s. per ton, drums and bairels free, ex wharf. Solvent naphthas are still rather quict, prices are unchanged on quotation: 90 to 160, 1s. 1½d.; heavy 90 to 190, 11½d. per gallon, naked at works. Petroleum iellies meet with a fair business: white to snow-white, £39 to £48 10s.; amber and yellow, £18 10s. to £22; dark stiff green, £11 17s. 6d. per ton, barrels free, ex wharf. Lubricating oils.—Spot is steady, while the shipment market is firm: spot, pales, £9 10s. to £22; reds, £11 to £21 10s.; dark cylinders, £11 15s. to £28; filtered cylinders, £18 to £27 10s. per ton, less 2½ per cent., ex wharf; slightly less for tank lots. Soluble oil and cutting compounds, £20 to £23 per ton net. No. 1 Russian oil is quoted on spot at £14 per ton, less 2½ per cent., barrels free, ex wharf.

### London Drug Auctions

Commercial Sale Rooms, Mincing Lane, E.C.3. July 26.

Moderate supplies were offered at the auction to-day, but, as is usual at this period of the year, buying was chiefly for current requirements, and little was disposed of. In fact, the tone was unusually depressed, and such was the lack of demand that one of the brokers concluded his auction with the remark that if the sales were not better supported, the brokers would not be able to incur the heavy expense of printing the catalogues. Sumatra benzoin and buchu leaves were steady, cardamoms, dragon's blood,

ipecacuhana and honey were quite neglected; in fact, a large quantity of the honey offered was passed over without mention of price. Rhubarb met with retail sales, likewise Tinnevelly senna and Alexandrian senna pods. Grey Jamaica sarsaparilla was cheaper, while native Jamaica was quite neglected, as was beeswax. The following table shows the quantity of goods offered and sold, the asterisk denoting private sales:-

Offered	Sold	Honey— Offered	Sold
Aconite root (Jp.) 32	0	Chilian (kgs.) 30	. 0
Aloes		Guatemala 40 Haiti 4 Jamaica 634	. 0
Cape 10	10	Haiti 4	0
Curacao 6	0	Jamaica 634	. 0
Zanzibar 22	0	San Domingo 126	. 0
Ammoniacum (cs.) 9	0	St. Lucia 2	. 0
Ammoniacum (cs.) 9 Anise oil, star 10 Annatto seed 20 Areca 20 Arnica flowers 4 Asafetida 11	0	Siberian 152	0
Annatto seed 20	0	Ukranian 31	
Areca 20	0	West Indian 17	. 0
Arnica flowers 4	0	Ipecacuanha—	
	0	Matto Grosso 24	. 1
Balsam tolu 5 Bay oil 9	0	Jalap (V.C.) 9	. 0
Bay oil 9	0	Kino (Afr.) 8	. 0
Bay oil 9 Belladonna root 7	0	Kola 10	. 0
Benzoin—		Liquorice root 46	. 0
Palembang 15	0	Marking nuts 140	. 0
Saigon 1	0	Musk seed 11	0
Benzoin— Palembang . 15 Saigon 1 Sumatra 119	13	Myrrh	. 0
Buchu 72	6	Nux vomica 364	. 0
		Ulibanum 57	. 0
Calumba 20	0	Orange peel 44	. 0
Cannab. Indica— African 10 Bombay 1	^	Orange peel, sweet 16	. 0
Pombar 1	0	Palmarosa on (pots) 5	0
Conthoridae (Ch.) 10	0	Papain (cs.) 1	1
Candiarrues (CII.) 10	0	Potasti profitide (cs) 1	0
Bombay 1 Cantharides (Ch.) 10 Capsicums 20 Cardamoms 159	8	Matto Grosso	ŏ
Cardamons wild E.I. 20	ů	Phylogical root 30	4
Cascara cog	0	Rhubarb (Ch.) 106 Sandarac 9	0
Cascara sag. 196 Cascarilla 1 Cashew nuts Cassia fistula Cassia fistula	1	Sandarac 9 Sarsaparilla—	U
Cashaw puts 54	ō		6
Cassia fictula 103	ő	Honduras 9	Ö
Cassia fistula nacto 10	ŏ	Honduras 9	16 2
Chiretta 4	ŏ	Lima	ő
Cassia fistula paste 10 . Chiretta 4 . Cinchona 65 . Cinnamon 15 . Cocillana bark 27 .	ő	Senna and node	
Cinnamon 15	ŏ	Alex 170	11
Cocillana bark 27	ŏ	Tinnevelly 217	15
Colocynth and pulp 81	5	Soan nuts 52	52
Copaiba (cs.) 7	ŏ	Strophanthus 4	0
Copaiba (cs.) 7 Coriander seed 40	ŏ	Tamarinds (Java)	
Cubebs 24	ŏ	(cs.) 2	0
Cubebs	Ō	Tamarinds (W.I.) 63	0
Cuttle fish bone 90	Ō	Tonka beans 17	. 6
	0	Turmeric 180	0
	-	Valerian (Ind.) 11	11
Elemi 15	0	Wax (bees')—	
Galbanum 3	0 -	Strophantus 4 Tamarinds (Java) (cs.) 2 Tamarinds (W.I.) 63 Tonka beans 17 Turmerie 180 Valerian (Ind.) 11 Wax (bees')— Calcutta (bl ) 31 Tares Salaam 14	0
Gambier cubes 10	O		
Gamboge 5	0	East African 36	0
Gingergrass oil (pots) 2	0	East Indian 24	0
Gamboge 5 Gingergrass oil (pots) 2	7	Jamaica 21	0
Gum acacia 142	0	Morocco 15	
Gurgun oil (cs.) 9	0	Wax, Carnauba 15	0

Next Drug Auction-September 20.

ALOES.—Cape was represented by ten boxes only, consisting of fair seconds, for which 39s. per cwt. was paid. Of of fair seconds, for which 59s, per CWL was paid. Of Curacao, six boxes offered, mostly bright capey quality, for which 75s, to 60s, per cwt, was wanted, and 72s, 5d, for dull capey. Fair hard Zanzibar in skins was obtainable at £5 10s., part dark at £5 5s., and part drossy and dark at £4 10s, per cwt. Privately Cape is scarce, with good hard bright offering at 42s, 6d, per cwt, in large cases, and 40s, in small cases. Socotrine in cases is £5 5s., and skins 66 7s, 6d, for part hard bright. £6 7s. 6d. for part hard bright.

Areca.-A lot of twenty bags fair, sound Ceylon was offered, and retired at 40s. per cwt.

ARNICA FLOWERS.—A lot of four bags was limited at 1s. 3d. per lb.

ASAFETIDA.-A new lot of 127 boxes offered, three boxes of which consisted of good loose drop, for which £8 per cwt. was wanted, and for seven boxes slightly blocky ditto £7 10s.; brown blocky lump, of which the bulk consisted, was limited at from £5 to £6 15s. per cwt.

BUCHU was about steady, the sales comprising a bale of good round green free from stalk at 1s. 4d. per lb.; two bales bronzy and stalky ovals at 1s. and three bags inferior yellowish and bronzy mixed stalky ovals at 10d. per lb.

Benzoin.—Of Sumatra, 13 cases sold at from £6 15s, to £7 5s, per cwt. for good fair seconds with small almonds. Palembang was held at from 80s, to 82s, 6d, per cwt. for ordinary barky thirds.

CALUMBA.—A lot of 20 bags medium to bold washed sorts was bought in at 40s. per cwt.

CANTHARIDES.—A lot of ten cases part dusty and broken Chinese was limited at 1s. 5d. per lb.

CARDAMOMS met with a retail sale, comprising Ceylon-Mysore, bold dullish, 4s.; small and medium, 3s. 1d. to 3s. 5d.; tiny, 3s.; brown splits and pickings, 2s. 8d. to 2s. 9d. For bold pale smooth 6s. 10d. was bid and refused.

CASCARA SAGRADA.—A lot of 76 bags fair 1922 peel was offered and limited at 62s. 6d. per cwt. A further lot of four-year-old bark also offered and was retired at 60s. per owt.

CASCARILLA. - A single bag of siftings all that offered, sold at 1s. 9d. per lb.

CASHEW NUTS .- Fifty cases fair blanched from Coconada were bought in at 90s. per cwt.

COLOCYNTH was in larger supply than usual. Fifteen bales of fine pale pulped via Port Sudan were offered and five sold at 1s. 9d. per lb.; twelve bales slightly yellowish ditto were limited at 1s. 7d.; good pale apple was obtainable at 1s. and broken at 9½d. per lb.

Cus cus.—A lot of ten bales fair bright from Alleppy was bought in at 35s. per cwt.

CUTTLE FISH BONE.—Good whole pale East Indian was limited at 1s. 2d., and a bid of 1s. per lb. was refused for five cases.

DRAGON'S BLOOD was in good supply, but quite neglected two cases fine, fiery reboiled Singapore saucers were limited at £28 per cwt., and good reboiled, slightly mixed, at £25.

GAMBIER.-For ten bags of cubes the buying in price was 55s. per cwt.

GAMBOGE.—Five cases only offered (said to be only parcel in London) and limited at £23 per cwt. for fair Siam pipe, partly blocky.

GUAIACUM was represented by seven bags, consisting of mostly fair glassy lump, which sold at from 1s. 3d. to 1s. 6d. per lb.

GURJUN OIL.—For nine cases from Bangkok 9d, per lb, was wanted.

Honey.-The position to-day was such that buyers pre-HONEY.—The position to-day was such that buyers preferred to treat privately after the auction limits were disclosed, and no public business was done. It is quite possible that after the sale a fair quantity was disposed of, as it was impossible to ascertain exactly what the actual prices were. Pale amber liquid Jamaica was obtainable at 39s, and liquid amber at 35s. A large number of lots were passed over without mention of price.

IPECACUANHA. - Matto Grosso was limited at from 10s. 9d. to 11s. per lb. for lean to fair bright; a bale of part mouldy sold at 9s. 6d., and a bid of 8s. per lb. is to be submitted

for country-damaged.

Kola.—Ten bags partly small shrivelled West Indian halves were limited at  $5\frac{1}{2}$ d. per lb.

LIQUORICE ROOT.—A lot of 26 bales thin natural Cape was limited at 18s. per cwt.

POTASSIUM BROMIDE.—A case of B.P. c make) sold without reserve at 1s. 6d. per lb. crystals (Bieber's

RHUBARS.—The only sale was two cases of common small round, rough High-dried, with three-quarters fair pinky fracture at 1s 10d, per 1b. Medium to bold round Shensi with three-quarters fair pinky fracture was bought in at from 4s, to 4s, 3d; flat ditto at 3s, 9d., and pickings at 2s, 9d. to 3s. Canton was bought in at 2s, 9d, for medium round, with two-thirds fair pinky and one-third grey fracture.

SOAP NUTS.—A lot of 52 bags from Bombay offered without

reserve and sold at 5s. per owt.

SARSAPARILLA.—Grey Jamaica was cheaper and in larger supply; four bales of fair fibrous sold at 1s. 10d. per lb., and in the concluding catalogue 20 bales offered, and a bid of 1s. 8d. per lb. is to be submitted for the whole parcel to two buyers. Two bales partly chumpy Lima-Jamaica sold at 1s. 6d. per lb. A laws quantity of partly of the submitted for the whole parcel to two buyers. to two buyers. Two bales partly chumpy Lima-Jamaica sold at 1s, 6d, per lb. A large quantity of native Jamaica was limited at from 1s, 6d, to 1s, 9d, per lb. Privately Mexican is cheaper at about 9d, per lb. on the spot. Honduras roli is 2s. 6d. for good.

SENNA.—Tinnevelly was quite neglected, ten balck of No. 3 leaf selling at 2½d, to 2¾d, per lb., and for five bales good pods 6½d. was paid. Of Alexandrian ten cases of pods sold at from 2s. 6d, to 2s. 10d, per lb, for fair handpicked, and for a bale of darkish 1s. 3d, per lb, was paid.

TONKA BEANS.—Six cases ordinary Para sold at 1s. 2d. per lb.; fair was limited at 1s. 7d. to 1s. 8d. and frosted Angostura at 4s. 6d. per lb.

VALERIAN ROOT.—A lot of 11 bags Indian of doubtful quality

WAX BEES met with no demand. Fair bleached Calcutta was limited at £10 2s, 6d, to £10 5s, and Jamaica at from £7 15s, to £8 12s, 6d., as to quality. East African at from £7 15s, to £8 per cwt.; small sales were made prior to the auction. auction.

### U.S. Drug and Chemical Imports

THE following figures relate to the imports of medicinal and pharmaceutical preparations, crude drugs, etc., and industrial chemicals into the United States for the months of November 1926 and 1927, and for the eleven months ended November 1926 and 1927:-

	November,	ber, November,	Eleven months ended		
	1926	1927	November, 1926	November, 1927	
Medicinal and					
pharmaceuti e a l preparations:					
Quinine sul- phate oz.	122,500	207,000	1,473,600	1,734,160	
All other quinine and other alka-					
loids and salts from cinchona					
bark oz. Menthol lb.	241,300 30,200	110,610 25,590	1,297,959 426,021	1,187,233 328,367	
All other pre- parations,		20,000	, , , , , , ,	0=0,001	
n.e.s.* lb. Crude drugs, etc.:	185,534	217,051	2,344,749	3,016,113	
Ciuchona barks,	262 126	276 467	3,643,149	1,672,021	
Pyrethrum	262,126	236,467			
flowers Ib. Liquorice root,	1,431,569	975,610	8,425,314	8,564,850	
Liquorice	6,900,936	7,477,080	76,703,860	73,425,646	
extract lb. Opium, crude,	_	5,858	984,004	723,718	
8.5 per cent. or more morphine,					
Ib. Senna lb.	15,745 770,734	16,511 664,086	120,629 2,991,351	113,813 2,246,776	
All free lb. other dut. lb.	1,938,069 223,157	1,755,252 228,739	18,288,776 2,443,771	18,023,582 2,414,210	
Industrial chemi-	220,131	226,133	2,140,111	2,414,210	
Acids and anhy-					
drides: Arsenic, whitelb.	748,825	981,145	15,063,169	24,088,745	
Citric . lb. Formie . lb.	11,200 245,276	5,600 224,329	137,984 2,078,500	113,904 3,027,084	
Oxalic lb. Sulphuric (oil of	223,444	17,532	1,464,900	1,722,868	
vitriol) lb. Tartaric lb.	3,594,998 83,552	564,562 135,520	53,069,661 1,486,292	33,829,101 2,587,139	
All \free lb, others \frac{1}{2} dut. lb.	917,967	32,540 1,036,897	1,633,046 9,892,870	149,869 11,645,996	
Ammonium compounds, n.e.s.:	011,001	1,000,001	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-1,070,000	
Chloride lb. Nitrate lb.	2,555,490 268,397	1,185,009	13,290,605 7,016.048	13,519,178 10,621,281	
All others lb.	28,441	278,874 62,025	1,113,637	1,717,931	
pounds lb.	1,392,182	1,165,707	23,417,668	13,415,627	
Calcium carbide lb.	2,950,400	253,225	20,182,444	4,511,100	
Cobalt oxide lb. Copper sulphate	22,776	18,750	308,502	312,647	
lb. Bleaching pow-	388,073	447,515	2,414,387	1,587,326	
der lb.	504,683	144,406	3,182,019	2,575,441	
Glycerin:			3,371,409	166,305	
Refined lb.	1,012,126 1,022,285	997,555 662,542	26,222,505 9,914,127	14,396 865 7,581,827	
Iodiue, crude, lb.	60,047	74,060	641,089	881,017	
Magnesium compounds lb.	4,334,048	1,412,850	28,026,890	19,574,528	
Potassium com-	,,,,,,,,,	,,	,,	,, . 2 .	
pounds, n.e.s.: Cyanide . lb. Carbonate lb.	1,121,145	14,268 1,224,619	100,077 10,642,209	322,865 12,000,203	
Hydroxide lb. Nitrate, crude,	1,010,113	765,060	11,698,035	13,401,776	
ton Bitartrate,crude,	507	44	9,416	3,241	
argols lb.	2,673,318	2,698,485	24,149,726	23,455,428	
Cream of tartar, lb,		-	214,402	257,295	
Chlorate and perchlorate lb.	1,135,282	1,041,185	11,558,497	12,184,659	
Other potassium compounds, lb.	666,703	1,070,075	10,556,541	8,684,663	
Sodium com- pounds, n.e.s. :			-		
Cyanide lb. Ferrocyanide lb.	2,216,084	2,766,113 33,899	29,736,822 759,013	30,384,321 1,729,057	
Nitrate lb. Other sodium	22,227		1,906,855	252,860	
comp lb.	1,490,635	-	18,785,636	_	

<sup>\*</sup> Not elsewhere specified.

### Sudan Gum Acacia

BOXALL & Co., in their report dated July 1, state that arrivals at Kordofan stations from May 20 to 30 amounted to 460 tons against 555 tons for the corresponding ten days during 1927, whilst in June arrivals amounted to 851 tons against 934 last year. The decrease for the wholo period is 12½ per cent., but it must be remembered that last year's arrivals were exceptionally small, whilst there were stocks in the Sudan then which are apparently non-existent now, if gum held against forward contracts is ruled out. Moreover, gum held against forward contracts is ruled out. Moreover, owing to the early rains a large part of the gum arriving is rain damaged. The only stations now bringing in gum are El Obeid, Nahud and El-Odaiya. Prices from May 20 to June 11 at El Obeid continued steady, after which the market stood at 3d, more until June 26, when a further 3d, was paid and a steady rise set in to the end of the month. The total rise during the above period was 2s. 9d. per cwt. Higher prices, however, were paid outside the market to obtain such small stocks as were available, and with all exporters wishing to keep prices as low as possible in view of small demand from overseas the actual increases in price do not show to the full extent the nervous state of in view of small demand from overseas the actual increases in price do not show to the full extent the nervous state of the market owing to the small arrivals and insignificant stocks. Demand during June was certainly small, but it was as large as, and probably exceeded, the arrivals and available stocks. In view of the low and falling prices of past years buyers overseas were possibly sceptical of the increased prices asked, but the position has not improved as the days passed, and it is doubted if the requirements of the past week can be booked irrespective of repeatedly increasing prices. Between January and June this year there were 2,559 tons of Kordofan gum in excess of the arrivals for January-June 1927 but against this there was the lack of old crop stocks at the end of 1927, against the estimated 2,900 tons at the end of 1926. Besides this it is estimated the inferior Hashab is about 1,000 tons less in 1928 against 1927, but there are no absolutely correct figures as yet on which to base this assumption.

### U.S. Imports of Essential Oils

DURING the month of November 1927 the total value of essential oils imported into the United States was \$555,989, compared with \$421,597 for November, 1926. The following table gives the quantities of each oil imported during the months of November 1926 and 1927, and for the eleven months ending November 1926 and 1927:—

	November,	NT 1	Eleven months ended		
	1926	November, 1927	November, 1926	November, 1927	
Cassia and cinnamon . Ib. Geranium Ib. Otto of rose Oz. Bergamot Ib. Citronella and delenon grass Ib. Lavender and spike lavender Ib. Corange Ib. Sandalwood Ib. All free Ib. other dut. Ib.	17,311 13,305 3,418 5,113 91,384 32,364 6,744 7,929 200 208,018 47,449	16,310 5,869 376 5,857 273,032 60,040 37,034 14,558 865 253,348 19,446	294,748 215,341 31,502 70,169 1,123,340 151,757 492,593 189,116 4,126 2,622,966 432,113	344,575 175,067 23,144 99,989 1,369,947 287,370 381,300 177,979 4,080 2,785,889 493,169	

### Spanish Definition of Castile Soap

In reference to the note published in our issue of June 11, 1927 (p. 712), it may be noted that a further Royal Order, published in the "Gaceta de Madrid" for December 14, provides: (1) That the description Castille Soap (Jabón Castilla) may be applied only to the product of saponification of good quality olive oil with the necessary caustic soda, which has the following characteristics: No fats other than good quality olive oil may be used in its manufacture; it must not contain more than 2 per cent, of chlorides expressed as sodium chloride; the maximum water content is 25 per cent., and the maximum free alkali content may not be more than 0.3 grammes per cent.; when decomposed by mineral acids the fats extracted must show an iodino index figure (Hübl method) between 69 and 82; the oleo-refractometric degree of these acids must be between 41 and 43 at 40°; the soap must be white, smooth to the touch, of a pleasant odour and slightly alkaline in taste, and must be soluble in water or alcohol without leaving any residue. (2) That the term "Jabón Castilla," in addition to referring to a special class of soap known as being purely of Spanish manufacture, implies that the product proceeds from that country, and it may not be adopted by any manufacturer as a private mark, nor can it be used by non-Spanish producers, under the legal provisions relating to industrial and commercial property. In reference to the note published in our issue of June 11,

### U.S. Drug and Gum Imports

THE following are among the imports of drugs, herbs, leaves, roots, etc., into the United States during August 1927, compared with August 1926, and for the eight months ending August 1927, compared with the corresponding period of 1926:—

-	August,	August,	Eight months ended		
	1926	1927	August, 1926	August, 1927	
Cinchona	1b. 70,527 446,679 7,268,526 23,048 2,400 59,153 1,207,212 180,289	lb. 182,238 279,297 14,982,066 91,135 4,820 141,395 1,225,858 131,847	1b. 2,964,246 5,983,036 56,848,188 800,886 74,035 1,429,649 13,103,415 1,780,235	1b. 1,322,387 6,689,505 58,499,465 580,125 70,745 927,434 12,683,995 1,719 189	

Among the gums, resins, etc., imported were the

	August,	August,	Eight months ended				
			August, 1926	August, 1927			
Varmich gumes and	lb.	lb.	lb.	lb.			
Varnish, gums, and resins:	-						
Damar Kanri	1,168,397 213,211	910,018 368,007	10,170,707 3,715,591	10,236,112 2,646,325			
Shellac	2,338,338	1,907,818	21,098,353	17,044,336			
All other Camphor:	3,607,342	4,050,105	31,090,945	34,365,525			
Natural, crude	280,295 35,576	201,163 10,520	1,458,022	1,473,317			
Synthetic	245,371	168,123	690,096 1,942,334	778,558 1,738,295			
Chicle Balsams, crude	594,437 14,283	177,346 18,765	8.971,717 184,430	7,949,536 232,537			
Gums and resins,	11,2,00	10,103	104,430	*** = 1 .d.			
n.e.s.*: Acacia	761,816	853,118	7,954,792	5,805,599			
Tragacanth All other (free)	23,900 1,359,918	46,444 783,382	1,044,121 15,067,825	1,037,927			
,, (dut.)	2,812	2,025	23,578	30,878			
Agar agar	46,470	25,063	278,793	224,707			

\* N.e.s.: Not elsewhere specified

### Java Cinchona and Coca Exports with us

THE following table gives the exports of cinchona and coca from Java during the period January to April 1928, compared with those of the corresponding period of 1927 (amounts in kilos.):—

		Cinc	Cinchona - Coca		
	_	JanApril 1927	JanApril 1928	JanApril 1927	JanApril 1928
Great Britain- British India Germany Japan Netherlands Port Timor		266,032 36,022 137,619 1,095,092	462 16,963 1,451,886 25	12,135 104,320 269,963	9,380 108,505
Total		1,534,765	1,469,336	386,418	117,885

Exports of quinine from Java during the first four months of 1928 were 7,614 kilos, against 5,052 kilos, during the same period of 1927.

### Standardising Cod-Liver Oil

OWING to the confusion existing in the cod-liver oil industry on account of lack of standardised trade terms and trade practices, the Scientific Division Committee of the United States Fisheries Association is attempting to secure the co-operation of manufacturers, jobbers and distributors of cod-liver oil in establishing standards. Several months ago a letter of explanation and questionnaire were sent to about a letter of explanation and questionnaire were sent to about three hundred firms and individuals, requesting information concerning present conditions. From the replies received a preliminary survey with recommendations has been compiled and will be sent to the industry for further suggestions. This survey takes up specifications for medicinal cod-liver oil, animal cod-liver oil, and cod oil; as well as descriptive terms suggested for the process of removing cod-liver oil from strictly fresh livers by direct steam, for cod-liver oil obtained by chilling and pressing crude cod-liver oil obtained by chilling and pressing crude cod-liver oil to remove the portion that solidifies at 0° C, or any higher temperature, for cod-liver oil produced from livers that were not strictly fresh, and for cod-liver oil that has been bleached, deodorised, neutralised, or subjected to any similar treatment to improve its appearance.



Letters for this section should be written on one side of the paper only. Correspondents may adopt an assumed name for purposes of publication, but must in all cases furnish their real name and address to the Editor.

### Annual Sales

SIR,—Is it advisable for a chemist to hold an annual sale at all? When I use the word "chemist" I mean, of course, the one we generally speak of as a private chemist in distinction from the multiple-shops and stores chemist in distinction from the multiple-shops and stores with drug departments. One can understand drapers and similar traders having sales; their goods go out of fashion, styles and colours change, and a reduction in price really means the clearing of old stocks to make room for new lines, while at the same time giving an opportunity of a bargain to those persons who are looking for something serviceable rather than something in the dernier cri. But these arguments do not apply to the commodities the chemist sells. Therefore it seems to me that to inaugurate a sale of genuine chemists' lines on the principle of a shilling article for ninepence is rather to defeat one's own object. Many people keep a look-out for these occasions, and at other times shop elsewhere. Regular users of a particular article naturally seize the opportunity to purchase three or four during the sale week and so lay in a stock, the result being that the chemist loses the sale of that line to that customer at the regular price for several weeks result being that the chemist loses the sale of that line to that customer at the regular price for several weeks to come. And it must be very difficult to have to tell a customer, "No, it was ninepence last week, but now it is one shilling"; I can imagine it would lead to a lot of argument with difficult persons. Also, if there is any real rush, what a splendid opportunity for pilfering! I should say that the chemist who wishes to build up a genuine business, and a reputation as a chemist, would do better to leave sales to the class of shop where the public expects them: if he is anxious to shop where the public expects them; if he is anxious to increase his circle of customers there are plenty of ways of doing so without resorting to startling price reductions. Type Yours truly, 1328. Com

SALE PRICE (26/6).

### Gloucestershire Villages

Sir, —I was amazed on reading Mr. Cecil Owen's article on the Conference trips to see he states that Bourtonon the "Conference trips to see he states that Bourtonon-the-Water is the prettiest village in the Cotswolds.
Has he never heard of Burford, the inhabitants of which
yield to no place the title of the "Pride of the Cotswolds"? It was the home of the Lenthalls (Speaker of
Charles I's Parliament, and also of Cromwell's), in the
Priory Almshouses, given by Warwick the king-maker.
A main street that is the envy of all the Cotswolds, not
two houses alike: a church in which our American cousins
delight. Then what about Bibury, Chipping Campden
and Cirencester? While the tour arranged might be
thought good, unfortunately the oldest and best places thought good, unfortunately the oldest and best places have been overlooked. I might say that the premises where this letter was written have records from 1340. They were first purchased by an apothecary in 1734, and have been a chemist's ever since.—Yours, etc.,

R. REAVLEY.

Burford.

### Shop Bottles on Shelves

Sir. Referring to recent correspondence in your columns, I must disagree with the statement that shop bottles have disappeared from our shelves with a few exceptions; mentally casting my eyes round the pharmacies in my own neighbourhood, a large residential one, I cannot call to mind a single instance in which the shop rounds have been relegated to the back, and their places filled with patents. I can recollect one, or, perhaps, two where the bottom row, usually filled with dome-topped ointment jars, has been called into use for keeping packed mes, but even in these the upper shelves still retain their gold-labelled bottles. It is not at all unusual for customers to come in and quite candidly tell one that although they may go to the stores for fancy goods they would

certainly not buy their drugs there, as when they want medicine they feel that they are getting something more reliable from the chemist who owns a shop more in keeping with medicinal preparations. For a similar reason I do not see that there is any cause for pharmacists to be alarmed at the sale of drugs and tablets by bazaars and small dealers; while there are always some people whose purchases will be determined by the price factor alone, there are a great many more who prefer quality to price when it comes to buying medicine for their own consumption. Similarly, I think it is a great pity that the old well-known sign of the chemist's shop has been allowed to fall into disuse, namely, the carboy. The pharmacist who keeps his shop looking like a pharmacy, sells in it the best quality of drugs he can buy and gives an adequate service will always be able to hold his own.—Faithfully yours,

ADEQUOT (7/11).

### Weights and Measures

SIR,—I am afraid it would be a rather hopeless proposition to induce the British public to buy and sell by metric weights and measures, or to drop the old nomen-clature in favour of a new one, whatever intermediate steps might be advised or adopted. Even in the home steps might be advised or adopted. Even in the home of the metric system some of the old names still persist in daily custom; in France the words "sou" and "livre" are commonly used, very often to the confusion of the tourist who has endeavoured to learn the currency in centimes and francs. When one asks the price of something it is not uncommon to receive the answer "Quinze sous le quart," and it requires quite a mental calculation and sometimes a good deal of explanation to arrive at the right values. Similarly with regard to the dosage of medicines: in Continental countries where the dosage of medicines; in Continental countries where the prescriptions are written and dispensed according to the prescriptions are written and dispensed according to the metric system the dose is ordered by the spoonful. It is true that the B.P. has adopted the term "mil," but I have only so far come across one doctor who was brave enough to attempt to write his directions in terms of mils, and if the bottles had been labelled exactly as ordered the patient would have had to take more than the bottleful for a dose. Needless to say, after being acquainted with the fact, the prescriber went back to the old doses. At the same time, a set of metric weights and a few measures for the dispensing metric weights and a few measures for the dispensing counter are not very expensive, and I have found them useful in making B.P. preparations without converting to English equivalents.—Yours truly,

METRICO (17/4).

### Restriction of Photographic Dealers

SIR,-What has become of the pledge given by the photographic manufacturers regarding the opening of new accounts? In my district they are fairly tumbling over themselves to open new accounts with all and sundry. Two such which have recently come to my notice are an organist and a hosiery worker, neither of whom has a shop nor could be considered a bona-fide retailer. Perhaps the Photographic Dealers' Association can enlighten your readers regarding the tactics of the manufacturers. -Yours, etc.,

Pourquoi (21/6).

### Subscriber's Symposium

For interchange of opinion among "C. & D." readers and brief notes on business and practical topics

N.H.I. Drudgery

Some chemists took up Insurance work to such an extent at the start that they lost their sense of proportion and developed N.H.I. to the neglect of their other business; in such cases I am afraid that it has become like an octopus, from the tentacles of which they cannot free themselves without actual danger to the life of their business. But if any pharmacist is wavering whether he should remain in the position of "Anti-Slave Trade" or become a "Free Man," then if he has any confidence in himself let him cross the Rubicon, cut out the unprofitable work and go in for business as a business proposition.—Libertas (22/2).

### Dispensing Notes and Difficulties

### A Puzzling Deposit

SIR,—I should be pleased to have information in the following mist. expectorans, N.H.I.:—

Ammon, carb.	***	•••	•••	3j.
Tr. scillæ	•••		•••	31j.
Tr. camph. co.	•••			<b>3</b> 88.
Syrup. tolu	***	***	•••	<b>3</b> 33.
Sacch. ust	000	•••	•••	388.
Aquæ			ad	3viij

Eighty ounces is made at a time, and separation takes place.—Yours faithfully, E. H. T. (30/4).

[We have dispensed this prescription, first mixing each ingredient separately with part of the water, and no deposit occurred. It is possible that variation in the saccharum ustum would account for separation.]

### Zinc Oxide Cream

SIR,—Kindly inform me how to dispense the following prescription :-

Ung. zinci ox., Adip. lanæ hydros., Liq. cælcis ... The liquor calcis separates out on standing. Yours faithfully

J. K. B. (6/5).

[Difficulties with preparations of this class can be traced in many cases to the use of lime water which was not of full strength. A smooth, thin homogeneous cream, which does not separate on standing, may be prepared as follows: Melt the benzoated lard and lanolin together, place in a mortar, and stir in the zinc oxide. Add the line water, previously heated to boiling, and stir until cold.]

### Miscellaneous Inquiries

When samples are sent particulars should be supplied to us as to their origin, what they are, what they are used for and how. We do not undertake to analyse and report upon proprietary articles nor to publish supposed formulas for them.

E. N. (29/5).—WATER SOFTENERS.—Permutits, or artificial zeolites, are hydrated alumino-silicates of soda, similar in composition to naturally occurring zeolites, e.g., analcite, Na<sub>2</sub>O.Al<sub>2</sub>O<sub>3</sub>.4SiO<sub>2</sub>.2H<sub>2</sub>O. Such compounds, in contact with aqueous solutions of metallic salts, enter into reversible reactions of the type :-

$$\begin{array}{c} \operatorname{Na_2O} \cdot (\operatorname{Al_2O_3} \cdot \operatorname{4SiO_2} \cdot \operatorname{2H_2O}) + \operatorname{CaCl_2} \cdot \operatorname{aq} \cdot \\ (\operatorname{Solid}) & (\operatorname{Solution}) \\ & \stackrel{\longrightarrow}{\leftarrow} \operatorname{CaO} \left(\operatorname{Al_2O_3} \cdot \operatorname{4SiO_2} \cdot \operatorname{2H_2O}\right) + \operatorname{2NaCl} \cdot \operatorname{aq} \cdot \\ (\operatorname{Solid}) & (\operatorname{Solution}) \end{array}$$

With dilute solutions of salts of the heavier metals, such as hard water, the reaction is almost complete toward the right; with concentrated solutions of sodium salts, e.g., brine, the reverse reaction largely preponderates. The subject is dealt with in detail in Thorpe's "Dictionary of Applied Chemistry" (Vols. I and VII).

- R. (9/6).—Softening skin rugs.—The hardened side of the skin is best softened by applying a saturated solution of ammonium chloride. If grease is applied, it should afterwards be removed as completely as possible by means of bran.
- J. L. T. (13/6).—MINERAL SUBSTANCE.—This glass-clear crystal was found attached to a rock near some lead mines in Glamorganshire. It proved to be pure
- T. T. N. (20/87).—STARTIN'S CALAMINE LOTION.—This preparation has the following composition :-

Zínc oxide ... ... Glycerin ... Calamine ... 1 oz. ... 1 oz. ... 2 drachms ... 1 oz. • • • Glycerin
Cherry laurel water
Elder flower water ... ••• ... 1 pint ...

M. K. W. (23/87).—ORLEANS VINEGAR.—The vinegar made from wine at Orleans is reputed to be the best produced in France.

### Legal Queries

Farmaceutico (23/87).—An assistant or manager is usually granted a fortnight's holiday after twelve months' service.

- B. (19/7).—The addition of a small amount of sodium bicarbonate in bottling green vegetables is permissible, since sodium bicarbonate is not regarded as a "preservative" within the meaning of the Acts.
- T. R. B. (20/6).—Whether benzamine is a poison coming within Part I of the Poisons Schedule depends upon the definition of what constitutes a "poisonous alkaloid," particularly since it is not a naturally occurring alkaloid, but a synthetic compound. For this reason it might be argued that it is not a poison within the meaning of the Act, and, consequently, outside the Labelling of Poisons Order.
- W. S. I. (9/7) occupies a lock-up shop, but has no agreement with his landlord with regard to repairs. An outside, pull-down sun-blind has been damaged by the wind. Who is liable to repair the blind? [It is quite clear that the landlord is not bound to repair the blind, "W. S. I." must make good the damage depends upon the circumstances, but if the damage was purely accidental, he is not, in our view, liable.]
- R. S. (24/87) is the tenant of a house under an agreement for one year with an option to continue the tenancy for a further period of one year or two years. If he remains in occupation of the premises after the end of the first year will this automatically continue the tenancy for another year, or will there be a monthly tenancy terminable by a month's notice? The rent is paid monthly. [Unless "R. S." gives up possession at the end of the first year the tenancy will continue for another year in the absence of a fresh agreement to the contrary.]
- E. H. D. (26/6) is in possession of combined shop and residential premises at an annual rent of £45 under a lease which will expire in 1930. The landlord offers to lease which will expire in 1930. The landlord offers to renew the lease at the expiration of the term at a rent of £95. Is this increase of rent permitted, or is the amount of the increase limited to 40 per cent of the present rent? [If the lease was made since July 31, 1923, the prennses are no longer subject to the provisions of the Rent Restriction Acts, and the amount of any increase of rent demanded is not limited by those Acts. Otherwise, the position will depend upon whether the Acts are still in force when the lease comes to an end. "E. H. D." may, however, have certain rights under the new Landlord and Tenant Act, and we advise him to consult a solicitor while his lease still has more than a year to 1un.] than a year to run.]

# Retrospect of Fifty Years Ago

Reprinted from "The Chemist and Druggist," July 15, 1878

New Pronunciation of Latin

New Pronunciation of Latin

Mr. J. R. S. Clifford says that it "affords matter for some speculation what attitude the chemists who are to form the next generation will assume with regard to the new Latin pronunciation which is vexing the soul of professors, as well as pupils in schools and colleges." He depicts the awkwardness which may arise between the apprentices, who are speaking like the Romans, and the estimable principal of the establishment, who abides by his school recollections.

... He would fain "see a wider appreciation of the merits of this noble language among pharmaceutists: it might be a relief from the toils of the counter to turn the pages of Virgil, Horace, or Ovid. But in saying this I am not professing admiration of those purists (or quibblers, shall we say?) who object to hear abbreviations of familiar Latin words, and would wish their students to ask in full for Unguentum Antimonii Potassio-Tartratis, instead of shortening this to Ung. Antim. Pot. Tart, and so on." Mr. Henry H. Pollard, of Ryde, who clearly knows his subject, wishes to inquire why economy of speech should always be effected at the expense of the "noble language." Why not try contractions in English? And we should get pretty phrases like pot, tart, ant, oint.; merc. oint.; and dist, wat.



### [Commenced C. & D., July 5, 1924]

Pedlar.—A person who travels on foot, from house to house, "without a horse or other beast bearing or drawing burden," offering goods for sale or offering for sale "his skill in handicraft," is a pedlar, and is required to hold a certificate. The certificate must be obtained from the chief police officer of the district in which the pedlar has resided for one month prior to the date of his application. The fee charged is 5s., and a new certificate must be obtained every year. A commercial traveller is not required to hold a pedlar's certificate. (See also "Hawker.")

Penal Statute.—Where compliance with the provisions of an Act of Parliament is enforced by imposing fines, imprisonment or other penalties upon those who disregard them, the Act is said to be a penal statute.

Penalty Clause in Contract.—The parties to a contract sometimes agree that in the event of a breach the one responsible shall pay to the other a specific sum of money. This is usually known as a penalty clause, and should it become operative the important question to be determined is whether the amount payable is really in the nature of a penalty or is, in fact, the amount which the parties have mutually agreed in advance is the reasonable and probable measure of the damages that are likely to ensue from a breach of the agreement. The importance of the distinction is that if the amount is merely a penalty the party who claims to enforce the clause will not necessarily be awarded the full amount if the dispute comes into court, but only such part of the penalty as will actually compensate him for the damage that he has suffered. If, on the other hand, the amount mentioned in the contract can be regarded as the agreed amount of the damages—"liquidated damages" as they are called—the injured party is entitled to the full amount specified. Usually, the clause expressly states that the amount payable for a breach of the contract shall be paid "as liquidated damages and not as a penalty"; but this is not conclusive. If the court considers that the amount is in reality a penalty, it will be treated as such, even though it is described as damages. There are no hard-and-fast rules for deciding whether a fixed sum payable on the breach of a contract is to be regarded as a penalty or as liqui-dated damages. Each case must be decided upon its merits. However, when a single lump sum is made payable by way of compensation for the failure to perform any one or more of several stipulations in a contract, some which might occasion serious and others comparatively trifling damage, the presumption is that the parties intended the sum to be penal and subject to modification, and the jury will award only such sum as will actually cover the amount of the damage suffered by the party who claims to enforce the penalty.

Pennyroyal Oil.—The commercial variety is distilled from the green parts of Mentha pulegium, and American pennyroyal oil is distilled from Hedeoma pulegioides. Two forms of true pennyroyal are met with in this country, the prostrate form known as decumbens and the upright type known as erecta. There are several other varieties met with on the Continent, but it is uncertain which are used there as sources of the oil. The plant used in Spain appears to belong to the variety eriantha, which bears hairy flowers. The Russian oil is stated to be distilled from Mentha micrantha. The European oil is distilled in the Spanish provinces Huelva and Cadiz, in the South of France, Algeria, and to a small extent in Turkey. The oil is yellow to redyellow in colour, and is sometimes distinctly fluorescent. It has the following characters:—Specific gravity, 0.930 to 0.952; optical rotation, +15° to +25°; refractive

index, 1.4820 to 1.4865; pulegone, 80 to 94 per cent. The principal constituent of the oil is the ketone pulegone,  $C_{1a}H_{16}O$ . Terpenes, menthol and menthone are also present. The American plant, Hedeoma pulegioides, is found from the Atlantic States to the Rocky Mountains. The bulk of the oil is said to be distilled in North Carolina. Its specific gravity usually lies between 0.925 and 0.940, and the optical rotation between +18° and +35°. Its principal constituent is pulegone. Barrowcliff has found present a phenol, pinene, limonene, dipentene, methylcyclo-hexanone, pulegone, menthone, isomenthone, a sesquiterpene alcohol, and esters of formic, acetic, octoic, decylic and salicylic acids.

Pennyweight.—A unit of weight equivalent to 24 grains (\frac{1}{2}\) of a troy ounce). The weight of a silver penny in English coinage ranged between 22\frac{1}{2} gr. in William I's reign and 7\frac{3}{4} gr. in Elizabeth's. The last issue of this coin for general circulation took place in the time of Charles II. The word "pennyweight" is also used as a proportional measure in stating the fineness of silver—e.g., silver of \frac{1}{1}\frac{1}{2} purity is described as being eleven pennyweights fine.

Pensions, Ministry.—The establishment of the Ministry of Pensions took place in 1916, when by Act of Parliament certain powers in respect of pensions were transferred from the Admiralty, War Office and Chelsea Commissioners to the Minister of Pensions. The Ministry now comprises several departments, each of which has its directors, secretaries, clerks and other officers. Address, Sanctuary Buildings, Great Smith Street, London, S.W.L.

Pepper.—The genus Piper, to which all true peppers belong, contains a large number of plants scattered over the tropics, though most of these are too weak, or poor in flavour, to be used as spice. By far the most important of these plants is the black pepper, Piper nigrum, and next to this come the long peppers, Piper officinarum and P. longum. African pepper has a small personal condenses a small usage, and cubebs have been long used as a drug. usage, and cubebs have been long used as a drug. Batek, P. miniatum, is used for chewing with betel-nut by natives. Black pepper is the dried fruit of P. nigrum; white pepper is obtained from the same plant, being merely ripe seed of the black pepper freed from the outer coat of skin and pulp. P. nigrum is a woody climber growing to great lengths in its wild state. The fruit is a nearly globular drupe, about one-fifth inch across when ripe, at first of a dull green colour, but eventually turning red When ripe it has a thin red skin beyeath which is a thin rulpy layer which encloses skin, beneath which is a thin pulpy layer which encloses the round, white seed. Good spikes are four inches long and bear about fifty peppercorns. In the Malay Peninsula this is the only variety of pepper apparently cultivated. The plants are always hermaphrodite with plenty of stamens, so that they are heavy fruiters. and in good strong plants the spikes have a fruit to each flower. When dried the peppercorns are not so large as some kinds, but fine samples of white pepper are obtained therefrom. Black pepper is almost invariably obtained therefrom. Black pepper is almost invariably propagated by means of cuttings, though it can be raised from seed. With regard to curing, different methods are adopted according to whether black or white pepper is required. For black pepper, the spikes are gathered into small baskets when only a few of the truits are ripe and red. and spread by women and children on mats for drying in the sun. An improvement on this is to plunge into boiling water before putting out to dry, as this hastens the eventual drying. The Chinese usually practise this latter method, which renders the skin tougher and gives the pepper a better The Chinese usually practise this latter method, which renders the skin tougher and gives the pepper a better colour. On drying, the pepper becomes quite black, and it is then rubbed by hand to separate the stalks, which are removed by winnowing. In Java a smoke room is used for drying the pepper. In dealing with pepper in large quantities it is essential to dry it with fire heat. since it is very susceptible to injure by mould. During the drying process the pepper must be constantly turned over and mildew watched for. For white pepper the gathering of the spikes is delayed till nearly all on the spikes are showing a red colour, but owing to the investigation of the spikes are showing to the spikes are showing the spikes are showing to the spikes are showing a spike spike spike spikes are showing a spike s irregularity of ripening this cannot always be done. In England white pepper is made direct from dried black pepper by milling in a special machine. The finest pepper by milling in a special machine. grades of white pepper are made from Singapore and

# The C.&D. Commercial Compendium

Penang black pepper in Europe by this milling process. When fresh dried, the pepper comes out white after hulling, but after keeping it is apt to turn a greyish colour. In order to make this look white, the grey seed is sometimes polished and limed. Limed pepper is often found in commerce, the adulteration usually taking place in the country of origin. The hulls rubbed off in decorticating are ground up and sold as pepper dust or as ground black pepper. This is also liable to heavy adulteration with dirt of all kinds. Black pepper is more pungent than white and contains more of the alkaloid, but consumers seem to prefer white pepper, which is very rarely adulterated. Ground pepper is, however, easily and often adulterated with, for example, ground olive stones. Ground white pepper is mixed with twice its volume of slaked lime and water as required, and evaporated on a water bath. The powder is then exhausted with commercial ether, when the piperine can be obtained nearly pure in straw-coloured crystals. By means of caustic potash, Potassium piperati is formed and treated with permanganate of potash, when piperonal crystallises out. Piperonal, or artificial heliotrope, is used in perfumery as a substitute for heliotrope.

Pepper is one of the earliest spices known to man, and for many ages was the staple article of trade between India and Europe. The Romans levied duty on black and long pepper at Alexandria about A.D. 176. Indeed, Venice, Genoa, and the commercial cities of Central Europe were indebted for a large part of their wealth to the pepper trade. The comparative value of pepper is shown by the statement that Alaric, the King of the Goths, during the siege of Rome (A.D. 408), demanded of the city a ransom that included 5,000 lb. of gold, 30,000 lb. of silver, and 3,000 lb. of pepper. In the time of Henry II (A.D. 1154-1189), a guild of Pepperers existed in London, which was subsequently incorporated with the Grocers' Company, which had the oversight and control of the trade in drugs as well as spices, dyestuffs, etc. The high price of pepper (it was valued at 16s. lb. in the fourteenth century, and was taxed in England in 1623 at 5s. a lb., and even down to 1823 at 2s. 6d. a lb.) led the Portuguese to seek for a sea passage to India, and the trade in pepper continued to be a monopoly of the crown of Portugal as late as the eighteenth century. The name pepper is somewhat loosely applied in commerce, including black pepper, white pepper, long pepper and Ashanti or African pepper, all of which are yielded by plants of the Piper genus (N.O. Piperacea), but red or cayenne pepper is yielded by species of Capsicum (N.O. Sola-pacea).

Black pepper (Piper nigrum, Linn.) is the dried fruit of a climbing shrub indigenous to the forests of Travancore and Malabar, whence it has been introduced into Java, Sumatra, Borneo, the Malay peninsula, the Philippines and the West Indies. The pepper vine grows on the sides of narrow valleys where the soil is rich and moist, the stems climbing to a height of 20 to 30 feet, where it can reach lofty trees to adhere to, but it is usually cut low; it also runs along the ground and propagates itself by striking roots into the soil. The method of cultivation varies in Sumatra and Malabar. In Malabar an acre is reckoned to bear 2,500 plants and to cost not more than £4 to bring into bearing, whilst yielding a produce worth about £80. Each vine gives normally two lb a year up to 15 to 20 years. The fruits are full grown and hard between mid-December and mid-February, and the bunches of fruit are then hand-plucked into bags or baskets, and the berries detached from the stalks by rubbing with the hands or feet on a mat. The sound berries are then sun-dried for two or three days in a single layer and put in earthen jars at night away from the dew. The dried pepper is put up in mat bags of 64 to 128 lb., and is then ready for export. The pepper plant has jointed stems, dichotomous branches, and broadly ovate five to seven nerved, stalked leaves. The fruit spikes are stalked, pendulous, opposite the

leaves, and three to six inches long, with twenty to thirty sessile fleshy globular fruits, arranged along a common stalk. The fruits are at first green, and then become red, or, if allowed to ripen, yellow, but if gathered, when hard, before maturity, they turn blackish-grey when dried. If left until quite ripe they lose some of their pungency, and gradually fall off. The wrinkled surface of black pepper is due to the shrinking of the middle loose layer of the pericarp of the fruit, the soft cells of which contain volatile oil. 1.2 to 3.4 per cent., and minute starch grains. The outer layer of pericarp, beneath the epidermis, consists of thick-walled cells containing resin, to which the pungency of pepper is chiefly due; the flavour depends upon the volatile oil. Pepper contains in its albumen 28 per cent. of a neutral crystalline body, piperin, which can be resolved into piperic acid, and piperidine; the latter is a liquid colour-less alkaloid, boiling at 106° C., having the odour of pepper and ammonia. The mesocarp also contains some fatty oil. The fruit on incineration yields 4.1 to 5.7 per cent. of ash. Whole black pepper is rarely adulterated in Europe, but in the Indian bazaars the dried berries of Embelia Ribes are often mixed with it. Ground pepper, on the other hand, is frequently adulterated in spite of the heavy penalties imposed on adulteration. Singapore is the chief centre of the trade in pepper, but a number of different kinds are offered in commerce varying in price. The following names appear in brokers lists and prices current:—Singapore, Penang, Aleppy, Tellicherry, Mangalore, Lampong, and Acheen in Sumatra; Cochin, Muntok, Trong and Setul in Siam, and Ceylon. Probably the largest quantity is taken by China; then follow Germany, Italy, Russia, Holland and Spain. Only about one-third of the quantity imported into this country is retained for home consumption. The largest quantity of pepper is said to be produced in the island of Rhio near Singapore, in Johore and Penang, the last-named afford

WHITE PEPPER is prepared by allowing the black-pepper berries to ripen, keeping them for three days in the house after gathering, washing and bruising them in a-basket with the hand till the stalks and pulp are removed, and then drying them. It is most largely prepared in the Straits, and the finest is produced in Tellicherry; Rhio is also a large centre of production.

prepared in the Straits, and the finest is produced in Tellicherry; Rhio is also a large centre of production.

Long pepper consists of the dried fruit spikes of Piper longum, Linn., and Piper officinarum, C.DC. The former is indigenous to Malabar, Ceylon, E. Bengal, Timor and the Philippines, and is cultivated along the East and West Coasts of India. The latter is a native of Java, Sumatra, Celebes and Timor. Up to three years old the yield from an acre is about 80 lb., but after the third year the roots are grubbed up, dried and sold as "pipli mul," for which there is a large consumption in India as a medicine. It is also used by the Persians and Arabs. The harvest is collected in January. The long pepper of English commerce is now chiefly imported from Java, and is derived from Piper officinarum, C.D.C. It is distinguished by its leaves attenuated at the base with pinnate veins. The leaves of Piper longum, Linn., have leaves cordate at the base and five-nerved. The Java fruits are usually covered with a whitish powder, but long pepper free from powder, and of a brownish tint, is sometimes imported, and is presumably the fruit of Piper longum. The fruits of Piper Betle, Linn., var. densum are very similar to those of Piper officinarum.

ASHANTI, OR WEST AFRICAN PEPPER, Piper Clusii, C.DC., is widely distributed in the Niam-Niam country in tropical Africa. It has the same taste as pepper, and could be procurable in large quantities, but rarely appears in the London market, and is then sometimes offered as African cubebs, but it has not a cubeb flavour, and is smaller than either cubebs or black

pepper.



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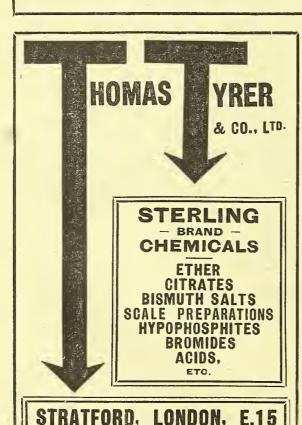
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Glycerine Dept., 46, Chancery Lane, London, W.C.2



### PUREST AND BEST

Sodium Salicylate, powder, flakes and crystal. B.P. Physiologically Pure.

Salicylates of

Ammonium, Calcium, Iron, Lithium, Lead, Magnesium, Potassium, Zinc.

CHEMISCHE FABRIK VON HEYDEN, A. G. Radebeul-Dresden (Saxony)

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Telephone: Royal 7076.

Telegrams: "Ilchembrau, Bilgate, London."

CINCHONINE CINCHONIDINE

Sugar-coated Quinine Tablets and Pills.

and

# ALTS

Gelatine-coated Oval Pills.

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**AMSTERDAM** De Wittenkade 48-59.

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# TARTARIC A

IN POWDER CRYSTALS and GRANULATED

WITH B.P.'14 GUARANTEED IN STRICT ACCORDANCE

PYROPHOSPHATE

Quality in all respects equal to Cream of Tartar, especially as regards stability of Baking Powder.

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### CITRIC ACIE

CITRATE of POTASH CITRATE of SODA

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BICARBONATE of POTASH

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### PRECIPITATED CHALK

CALC. CARB. PRECIP.

for Dentrifice Pastes, &c.



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TARTRATE of SODA TARTRATE of POTASH

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### WHEELEY'S LANE & E. STURGE BIRMINGHAM

AGENTS : H. J. BAKER & BRO., 81 Fulton St., NEW YORK -G. REINBOLD & CIE., 10 Rue Perrée, PARIS-

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# Hubbuck's Pure Oxide of

is made by sublimation, and is warranted to contain upwards of

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# Thos. Hubbuck & Son, Ltd.

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MANUFACTURERS OF WHITE LEAD, WHITE ZINC, PAINT, OILS, COLOURS, VARNISHES, &c.

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Lotthouse & Saltmer Ltd.
Mackay, Jno., & Co. Ltd.
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May, Roberts & Co. Ltd.
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Pinkerton, Ghison & Co.
Pinkerton, Ghison & Co.
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# DRUGS, CHEMICALS GALENICALS PILLS, TABLETS.

# Our Standard is High. Our Prices are Right. May we quote you?

All materials employed are the finest procurable, whilst scientific methods of preparation and standardisation ensure that the finished products conform to, and wherever possible exceed, B.P. or other recognised standards. Special formulæ prepared with scrupulous accuracy.

Write for Trad? Lists.

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LOZENGES PASTILLES

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Compressed Tablets

PACKED OR IN BULK, FOR WHOLESALE,
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# ASPIRIN AND CASCARA TABLETS

IN BULK OR PACKED.

A Customer writes:—"Re Aspirin Tablets. Your sample was one of the best we have ever had, we anticipate doing good business with you if you can maintain that quality."—WE CAN, AND MEAN TO!!

LET US QUOTE YOU.

### CASTLE HUSKISSON, LTD.

Manufacturing Chemists,

Swinton Works, Moon St., Islington, N.1
ESTAB. 1768.

Private formulæ Pills and Tablets carefully and accurately prepared at lowest possible prices.

Pills

# The Wholesale PILL AND TABLET HOUSE

Buy from Specialists.

Quality is our first concern.

PRICES VERY MODERATE.

Contracts for any quantity.

Quotations gladly given.

HOWARD LLOYD & CO., LTD., LEICESTER

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Granular, Crystalline or Powder. Impalpable Powder.

# **ASPIRIN TABLETS**

Supplied in bulk only. Guaranteed full strength and free from all impurities.

## SALICYLIC ACID B.P.

Passes all tests.

ALL FINEST QUALITY PRODUCTS.

COMPETITIVE PRICES.

FREE PACKAGES AND DELIVERY.

POSTCARD WILL BRING SAMPLES AND PRICES

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THE ORIGINAL BRITISH ASPIRIN MAKERS,

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Telegrams and Cables: "Pierson Morrell, Barnet,"

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PATTINSONS" MAGNESIA PRODUCTS



"PATTINSONS" MAGNESIA in its various forms occupies the premier position in the markets of the world owing to its chemical purity, lightness, uniformity of colour, texture and freedom from hygroscopic moisture.

Light and Ponderous Carbonate; Light and Ponderous Calcined; Fluid and Mist. Magnes. Hydrox. for Pharmaceutical purposes.

Also Industrial and Technical grades of highest quality.



# TESTOGAN

FOR MEN.

# **THELYGAN**

FOR WOMEN.

A Proven Efficient Remedy (Formula of Dr. Iwan Bloch) INDICATED IN

Impotence and Insufficiency of the Hormones.

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Made with Milk of Magnesia.

BISMOLAN SUPPOSITORIES AND OINTMENT. For the Treatment of Hæmorrhoids.

ATOCIN TABLETS for Rheumatism, Gout, etc.

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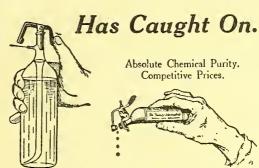
CAVENDISH CHEMICAL CORPORATION,

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# "Thilocologne"

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Ethyl Chloride Cum Eau de Cologne



Observe Thilo's New Syphon Bottle.

Observe Thilo's New Drop Nezzle for General Anæsthesia.

Now used extensively by DENTISTS.

HOSPITALS.

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Ask for prices and free sample tube for demonstration.

W. BREDT, 41 Gt. Tower St., London, E.C.3
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# PHARMACEUTICAL PRODUCTS

issued under the following Trade Marks or Brands in Original Packings as under:

### 'COMPRAL'

### 'HEXETON'

### 'NOVALGIN'

7½ gr. (0.5 gm.) tablets in tubes of 10. Intramuscular:—Brown ampoules (2.2 c.c. of a 10% solution). Intravenous:—Blue ampoules (1'2 c.c. of a 1% solution).

Bottles of 1-1 oz. Tablets, 7½ gr., tubes of 10.

### 'ADALIN'

### 'NOVASUROL'

### 'PYRAMIDON'

Cartons, ½-1 oz. Tablets, 5 gr., bottles of 25 and 100; 7½ gr., tubes of 10.

Boxes of 10 ampoules, 1'2 c.c. each.

Cartons ½-1 oz. Tablets, 1½ and 5 gr.

### 'VALYL'

### 'PHANODORM' 'PELLIDOL OINTMENT'

In tubes.

# In bottles of 25 pearls. 3 gr. tablets, tubes of 10.

### 'ORTIZON'

'THEOMINAL' Tablets in tubes of 20 and bottles of 50.

'LUMINAL' and 'LUMINAL' SODIUM

In bottles of 75 globules.

Cartons and bottles of 1-1 oz. Tablets, 1 to 5 grs.

PRICE LIST ON REQUEST FROM

BAYER PRODUCTS Ltd., 19 St. Dunstan's Hill, London, E.C.3

# HE ANGLO-FRENCH DRUG CO. LTD

Distributing Agents for High-Class French Pharmaceutical Preparations.

Continuous and active propaganda is being conducted with the Medical Profession for:

N.H.I.-In addition to the original tubes of 80 tablets, packages containing 24 tablets for the dispensing of N.H.I. prescriptions are now available.

### STANNOXYL (Brand) PRODUCTS.

	Retail.	Wholesale.
TABLETS (tubes of 80)	3/- each	28/- per dozen
,, (N.H.I. packages of 24)		9/- ,,
LIQUID (bottle)	4/- ,,	36/-
GLYCERINE (bottle)	4/- ,,	36/- ,,
OINTMENT (tube)	3/~ ,,	28/- ,,
AMPOULES (box of 8)	5/- ,,	45/- ,,

# GRAY'S INN ROAD, LONDON, W.C.1

Telephone: MUSEUM 4029.

Telegrams: AMPSALVAS, LONDON.

Associated Houses: Paris, New York, Montreal, Bombay, Sydney, Wellington, Tokyo.



# The Pack

and Show material which supersedes all others-

# UCAL MORNING SALT

Shows good Profit and ever increasing Sales.

# UCAL—The Brand Pre-eminent!

41/2d. Size

COSTS -3/-doz.

> 6 doz. -2/9

Gross - 30/-

7½d. Size

COSTS - 4/6 doz.

6 doz.

- 45/-Gross







For















United Chemists' Association ('Phone 3021) LIMITED

CHELTENHAM

and 4 and 6 KEITH GROVE, LONDON, W.12. Telephone: "RIVERSIDE" 4641.



# BELTONA

The Wonderful Solvent Lotion for :-

Arthritis, Rheumatism, Gout, Sciatica, Lumbago, Neuritis, Colitis, Laryngitis, and all Inflammatory Conditions.

Stocked by all Leading Wholesalers.

Retails at 3/-, 5/- and 20/- per Bottle.

Supplies for the Irish Free State can be obtained from Mr. E. V. Hanna, M.P.S.I., 69/70, Lower Mount Street, Merrion Square, Dublin. Australia, Messrs. Berglin Remedies, Ltd., Hibernian Buildings, Adelaide Street, Brisbane. South Africa, Messrs. Macdonald, Adams & Co., Ltd., Johannesburg.

Sole Proprietors:

BELTONA LTD., HODDESDON, HERTS.



## Beecham's Pills

1s. 3d. size = 11s. 9d. per dozen 3s. 0d. ,, = 28s. 0d. ,, 5s. 0d. ,, = 54s. 0d. ,,

### **Beecham's Powders**

1s. 3d. size (8 Powders) 11s. 9d. per dozen 5s. 0d. ,, (40 ,, ) 54s. 0d. ,,

Less 2½% Cash Discount.

A further 5% allowed for Window or other Advertising display.

Orders—Minimum Quantity FIVE POUND
(Assorted sizes, Pills and Powders).

PACKAGES FREE. CARRIAGE PAID.
TERMS: CASH WITH ORDER.

All communications to be addressed and cheques made payable to:
BEECHAMS\_PILLS\_LIMITED,

Sales Office:
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# Dr. BENGUE'S BALSAM

RHEUMATISM, NEURALGIA, GOUT.

Dr. BENGUÉ'S ETHYL CHLORIDE.
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PULMO (BAILLY).—FORXOL.—OPOBYL.
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ENTERO ANTIGENS.—STAPHYLOTHANOL.
NEOPANCARPINE, RICARD'S CACHETS.

BENGUE & CO., LTD., MFC. CHEMISTS, 24 FITZROY STREET, LONDON, W.1.

# WESSANEN'S PURE COCOA POWDER PRIME COCOA BUTTER

Sales Office:
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Manufacturing Chemists

LOZENGES · PASTILLES
TABLETS · PILLS
PLASTERS
HEALTH
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"Menthells" "Digestells"

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# Now in demand

MIDGE-BANE Prevents and Cures

INSECT BITE LOTION

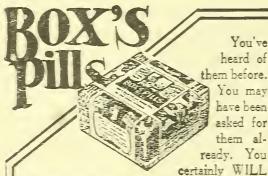
Reduces Swelling and Irritation

FRECKLE LOTION SUNBURN LOTION

> Salines, Citrate and "SPUN"

CREAMS and OINTMENTS

Elegant packs which sell at sight in all sizes.



be asked for them, because demand is now being steadily developed by advertising. (Display material supplied free.)

You've heard of

Sizes: 1/3, 3/-, 5/-, 12/-, and 22/-(On P.A.T.A.)

Wholesale prices on application.

Proposed only by the Proprietor: W. H. BOX, Manufactory, 161 King St. PLYMOUTH.

Telegrena: "Giant, Plymouth."

Awarded 2 Gold Medals and 2 Diplomas International Exhibitions, Paris and Rome, 1914.

# It will pay you to stock them!

When the public demand goods bearing a specified name the wide-awake retailer prepares to meet that demand and so reap the benefits which follow.

IGLODINE has become a household word, and the public, through statistical which comes after trial, are demanding IGLODINE PREPARATIONS. Are you the retailer who is preparing to meet the demand?

The Safe and Pure Antiseptic

Write to-day for full particulars to: THE IGLODINE CO., LTD. - Newcastle-on-Tyne.

PRESS ADVERTISING IS BOOMING

HOW ARE YOUR STOCKS?

Supplies from every Wholesaler,

The Fuller Laboratories, i, Crutched Friars, London, E.C. Telephone: Royal \$592.

# GOTABLETS For 2'6 CHEMIST'S SALES 33%

MADE
ENGLAND
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OSLOWGH BUCKS

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ENGLAND
ASPROLM
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BUCKS

As a result of persistent enquiry from the trade and public who wish to purchase 'ASPRO' in larger quantities, provided some concession can be made, we have pleasure in announcing a new packing in the form of 60 tablets for 2/6. This pack-

ing is now on the market and is available to the trade through the usual wholesale channels. The prices of the new line are as follows:—

Price to Public - 2/6 per packet of 60 tablets

Price to Chemists - 21/- per doz. [No bonus on this size]

PACKING—This pack can be obtained in a neat Silent Salesman containing I doz. packets

The 2/6 Size of 'ASPRO' means that your Customers get 10 TABLETS FREE. If you point this out to your Customers you render them a Service, and

# DOUBLE YOUR TURNOVER

Chemists are realising the fact that by devoting their window display to advertised goods they are sharing the goodwill of about £10,000,000 worth of advertising yearly. 'ASPRO' is perhaps the best demonstration of this principle that England has seen. 'ASPRO' spends £250,000 a year in advertising and is increasing its appropriation as sales grow. The chemist who places the 'ASPRO' Window Display in his window gets the benefit of the advertising just the same as if his own name appeared in the advertisement.

'ASPRO' is the Chemist's Largest Seller. Send for a Window Display and get full benefit of the £250,000 Continuous Advertising Campaign.

'Aspro' consists of the purest Acetyl Salicylic Acid that has ever been known to Medical Science, and its claims are based on its superiority.

Agents: GOLLIN & CO. PTY. LTD. ('Aspro' Dept.), Slough, Bucks.

No proprietary right is claimed in the method of manufacture or the formula.

POISONS and PHARMACY ACT.

Privy Council Order, Jan. 1, 1921.

DANGEROUS DRUGS ACT, 1920.

Regulations of May 20, 1921. (Operative Sept. 1, 1921.)

# Dr. J. Collis Browne's CHLORODYNE

is not affected by above Order or Regulations.

It does not require purchaser's signature.

Proprietors: J. T. DAVENPORT, Ltd., 83/87 Union Street, S.E.1

# A

Is this the Initial Letter of your Name?

IT DOES NOT REALLY MATTER, BUT THE CORRECT PLACE FOR YOUR INITIAL IS ON OUR

# "MONOGRAM"

SERIES of

PACKED PHARMACEUTICALS

Your Name on this Series Builds Goodwill!

MAY WE SEND SPECIMEN LABELS?

# "NEWBERYS"

CARDIFF: Crichton Place. CHARTERHOUSE SQ., LONDON, E.C.1

LIVERPOOL: College Lane. PARKER'S (REGD.)

NaS5+H2O



POISONOUS Preparations

A safe and rapid cure for all parasitic skin diseases.

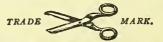
SULFLUID SOLUTION 8 oz. bottle 2/6 SULFLUID OIL ,, ,, 2/6 SULFLUID OINTMENT 8 oz. jar 4/6 4 oz. 2/6

PARKER WARD & CO. (1926), LTD. BOSHAM, SUSSEX.

ESTABLISHED OVER 60 YEARS

# PERRYS POWDERS

FOR CHILDREN'S AILMENTS



Wholesale from PERRYS POWDERS, Ltd., LEEDS

# GOODALL'S

X/E make and pack practically all the usual chemist lines—and many special ones of our own that are distinctly unusual. Especially we ask that you allow us to show you what we can do in



Waterglass Vitamine Malt Olive Oil Health Salts Salines Seidlitz Powders

> The 'Velva' Series of popular own-name lines (illustrated alongside).

# The Ku-Bist Series of Toilet Creations. 14 beautiful toilet lines very keenly priced.

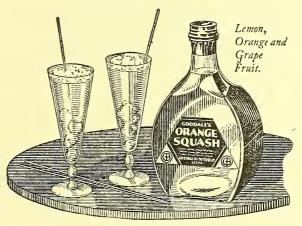
Why not let us show you what we are offering for the Summer of 1928? Ask for a contract price and samples of

anything you need, or, better still, allow us to send a representative to call with specimens and every detail. Illustrated Lists sent gladly on request.

Goodall's Fruit Squashes—a new 1928 line which our friends say is wonderful.

### Perfection in Own-Name work.

Our printer simply cannot give you other than perfectly satisfactory and suitable own-name work, for we have none but the best of modern type, perfectly chosen for own-name purposes and expertly set. The result is own-name labels that look what they should—that give our lines the finish and perfection you like to see on the things that bear your name, and for which you accept personal responsibility.



GOODALL, BACKHOUSE & CO.

LEEDS.

# **CLARKE'S BLOOD MIXTURE & OTHER PREPARATIONS**

## Wholesale Prices.

	Blood Mixture		£1:7:0	
	Miraculous Salve Special Aperient Pills	1/3, 3/- & 5/- 1 1/3 3/- 8 5/- 1	1/-, £1:7:0 1/-, £1:7:0	
29	Patent Skin Lotion	1/3, 3/2 & 3/2 1	11/2, 21:7:0	X 44:4:0
	Medicated Soap	1/-	. 9/=	

Orders: Minimum quantity £16:4:0 value. FREE CASES. Carriage paid upon orders of £100.

All Wholesale Houses keep a large stock of our Preparations and can supply smaller orders promptly.

Minimum Retail Selling Prices: 1/-, 1/3, 3/-, 5/- & 12/- Face Value, giving a PROFIT of 33\frac{1}{3}\% on cost to Distributors.

An attractive Showcard and Dummies supplied on application.

Trade Mark: "BLOOD MIXTURE." Regd. No. 3275.

Sole Proprietors:

THE LINCOLN & MIDLAND COUNTIES DRUG CO., LTD. Park Street, LINCOLN.

# TENEYS CAY ON ED WAR YE

for the Throat and Voice

Sold in tins  $4\frac{1}{2}$ d. and 1/6 each.

Sole Makers :

WHOLESALE TERMS ON APPLICATION

FERRIS LIMITED. BRISTOL CO.

# CONCENTRATED CINEMA SPRAY SOLUTIONS GERMICIDAL IN BOTTLES AND IN BULK. ENQUIRIES INVITED Joseph Brooks & Co. Ltd. Wholesale Druggists and Manufacturing Chemists 42 SHUDEHILL, MANCHESTER

# DOUBLE YOUR MONEY PROFIT

Are you interested in a line that pays you at least "DOUBLE YOUR MONEY" profits?

A profit of £10 on an investment of £10, this is accurately what the NYAL line pays many chemists.

The NYAL plan was born 26 years ago, now there are 25,000 NYAL Chemists in English-speaking parts of the world. These men have found the value of NYAL in their business. Why not you?

NYAL lines are an attractive series of Open Formula Household Remedies and Toilet Goods which are sold to Chemists, and Chemists only. They are not sold to the Draper, Grocer or Hairdresser.

There is no price cutting with NYAL.

Each package carries our guarantee that if your customer is not satisfied he gets his money back.

We offer generous FREE BONUS goods on seasonable lines.

Briefly NYAL offers-

TRADE PROTECTION PRICE PROTECTION BETTER THAN A LIVING PROFIT QUALITY



Further information cheerfully given by the

NYAL COMPANY LIMITED

SLOUGH, BUCKS

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# Increased Profits on Irving's YEAST-VITE Tablets

On and after APRIL 2nd, 1928, YEAST-VITE Tablets and YEAST-VIMAL will be sold under P.A.T.A. protection as follows:

YEAST-VITE	Sizes at	1/3 <b>12</b> /-	3/- 28/10	5/ <b>-</b> <b>48/-</b>	12/- <b>114</b> /-	24/- 220/- per doz.	Nett
YEAST-VIMAL	New Sizes	7½d.	1/2	2/2	5/-	9/6	30
	at	6/~	11/3	<b>20/9</b>	48/-	90/~ per doz.	Days

### Cantelling all previous SPECIAL WINDOW SHOW BONUS TERMS Ton a 14 days! Window Display Popus

r OI	a 14-uays	williach Disp	day Donas	with be given a	is under .
YEAST-VITE	14 to the	Dozen on £5	order and	over (Assorted)	Bonus on 1/3, 3/- and
	13 ,,	,, £3	**	39 - 37	) 5/- sizes only.
	No I	Bonus on 12/- or 24/-	sizes, or less to	han ½-dozen 5/- size.	

	Order.	Bonus.	Order.	Bonus.
<b>EXAMPLES</b>	3 doz. 1/3 £1 16 0	3 only 1/3	4 doz. 1/3 £2 8 0	8 only 1/3
	1 3/- 1 8 10	1 ,, 3/-	1½ ,, 3/- 2 3 3	3 3/-
	1 ,, 5/- 0 12 0		$\frac{1}{2}$ ,, 5/- 1 4 0	1 ,, 5/-
	£3 16 10	EXTRA PROFIT 6/9	£5 15 3	EXTRA PROFIT £1

YEAST-VIMAL 13 to the Dozen on £3 order and over (assorted sizes).

The Prominent Display of New and Attractive Show Material Will Double Your Sales. Write for Photographic Illustrations (with sizes) of New Showcards, Cut-outs, etc., sent FREE and carriage paid on request.

### IRVING'S YEAST-VITE LIMITED

'Phone: Clerkenwell 4623 (2 lines). Wires: Yeastvite, Cent, London. 12-16 LAYSTALL STREET, CLERKENWELL, LONDON, E.C.1

ROBB'S

## HERBALINE OINTMENT

## Gratis samples for the Public

We are advising the Public to apply to you for free samples.

### Send for a supply at once.

In addition we authorise you to promise to actual purchasers "Money back if not satisfied." Details of this on request.

RETAIL 1/3, 3/-, 5/- 10/-

PHILLIPS & ROBSON. LTD. 81 TURNMILL STREET, CLERKENWELL, E.C.1

ERGOAPIOL (smith) PROTECTIVE MARK

Patented in U.S. and Foreign Countries.

Ergoapiol (Smith) is now identified by the letters M.H.S. in the gelatin on the inside of each capsule. These letters are not visible from the outside, but they are plainly discernible in the gelatin when the capsule is cut in half.

MARTIN H. SMITH CO. NEW YORK, N.Y.

British Agents—
THOS. CHRISTY & CO., 4-12 Old Swan Lane, London, E.C.4

# The Physician's Remedy for Headache, Neuralgia, Neuralgia Trade Terms Powerful Advertising CEPHOS, Ltd BLACKBURN

The Physician's Remedy for Headache, Neuralgia, Neuritis, Rheumatism, and Influenza.

CEPHOS. Ltd. BLACKBURN.

Retail at 1/3 and 3/-

Powders and Tablets



The Monsol Group

Liquia 2|- bottle.
Ointment 2|- pot.
Throat Pastilles
1|6 & 2|9 box
Internal Capsules
5|- bottle.

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Sold by all Chemists.

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MONSOL IS A GOOD COMPANION



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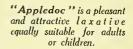
We are launching a widespread advertising campaign from which you will benefit.

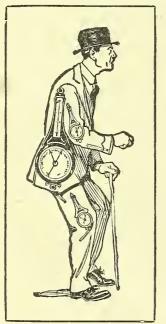
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It does not matter where the Barometer is

# CURICONES

will deal with the trouble, be it

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Quick Sales.

Generous Terms.

WELL ADVERTISED.

RECOMMENDED BY DOCTORS.

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Other Lines which also pay to stock:

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# STEPHEN MATTHEWS & CO. Ltd.

Manufacturing Chemists,

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Wires: "Curicone, Cent, London."

# IMPORTANT ANNOUNCEMENT

# BEECHAM-VENO JOINT SELLING ARRANGEMENT

E have pleasure in notifying the Trade that under an arrangement with the Veno Drug Co. (1925) Limited, Manchester, we have been appointed Sole Selling Agents (Home and Abroad) for the whole of the Veno Specialities, and, for your guidance, we wish to draw attention to the following particulars regarding orders and distribution:

### CENTRAL DISTRIBUTING DEPOT.

To facilitate packing and quick despatch of orders, Beecham and Veno goods are now dealt with at the following address:

# BEECHAMS PILLS LIMITED CHESTER ROAD, MANCHESTER

where all orders and communications should be sent.

## COMPOSITE PARCELS.

Composite parcels will be accepted for Beecham and Veno lines, and to enable all chemists to take advantage of this arrangement, we wish to call particular attention to the following terms, and it may be noted that composite orders from £5 0 0 are executed.

# For Cash with Order—Minimum Order £5 Value For Monthly Account—Minimum Order £10 Value

All orders subject to  $2\frac{1}{2}\%$  and further 5% Window Display Allowance. Carriage Paid. Cheques payable to "Beechams Pills Limited."

THE ABOVE £5 AND £10 ORDERS CAN BE PROCURED ON SAME TERMS FROM YOUR WHOLESALE HOUSE

For . . GASTRIC or ULCER DUODENAL

Two of the most suitable salts for the rapid counteraction of gastric acidity are tribasic magnesium phosphate and tribasic calcium phosphate. (Vide GUY'S HOSPITAL REPORTS, APRIL 1928)

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(ABBOTT)

contains both, as well as magnesium citrate and sodium biphosphate. Pleasant to take, in effervescent form, CALSOMA is an ideal gastric antacid, for it

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It is much more satisfactory to have one which is quite PRIVATE. The purchaser need not see any of your business. Our page to an entry book prevents that. A correspondence card always in the book, with an elastic band, "keeps the place" and covers the left-hand leaf when filled in.

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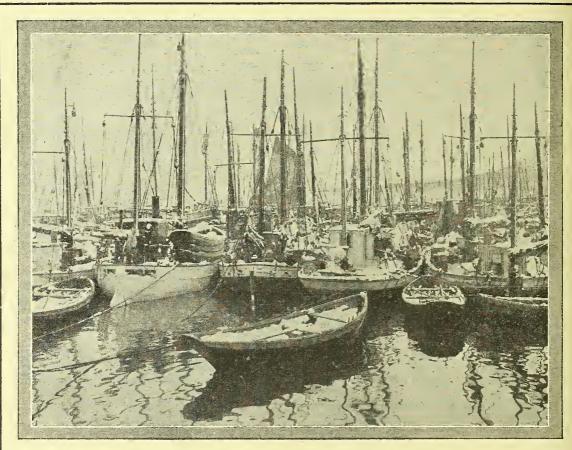


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By far the greater part of the cod, the liver of which is used for the production of Norwegian codliver oil is caught in the winter and early spring, when the temperature of the air is low, i. e. from about 19° to about 39° F.

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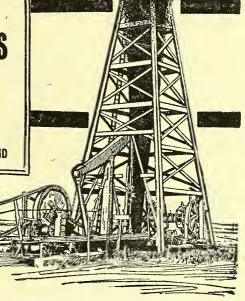
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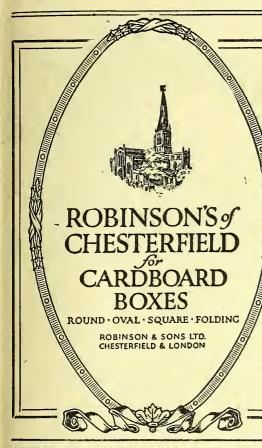
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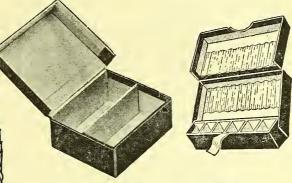


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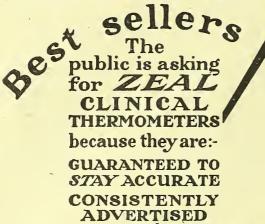
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Read what a leading member of the medical profession writes:—

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# NORVIC

BLUE CARTON CRÊPE BANDAGES IS INCREASING ENORMOUSLY

Invaluable for all support and as a relief and preventative for varicose veins. The special flesh colour bandage is practically invisible under silk stockings.

Norvic Blue Carton Crêpe Bandages are of guaranteed length, guaranteed width, and guaranteed durability. They last longest because their elasticity is retained after continual washing and the edges cannot fray or ravel.

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Cost 2" 12/-  $2\frac{1}{2}$ " 15/3 3" 18/3  $3\frac{1}{2}$ " 21/3 4" 24/3 doz. Sell 1/6 1/11 2/3 2/8 3/- each. Discount for quantities: 3 doz.  $2\frac{1}{2}\%$ , 6 doz. 5%.

A small display will materially increase your sales

Ask your wholesaler for the NORVIC showcard

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Ask also for SIMPLIC TEATS Each in Carton

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FOR BATHING AND EVERYDAY WEAR

Made with Circular, Inquinal or Scretal Pade.

INSTANTLY ADJUSTED.

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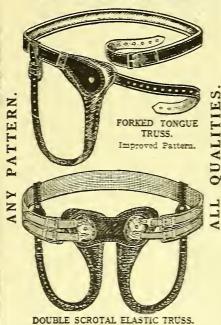


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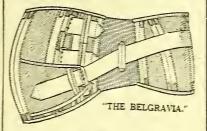
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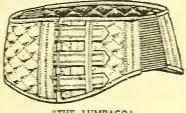
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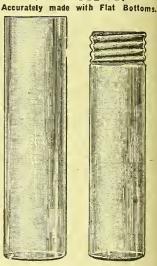
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# PHOSFERINE

# **New Window Display Conditions**

#### Monthly Account.

Carriage Paid.

For a small Central Window Display of not less than 14 days and an order for £5 worth of Phosferine we allow a bonus of 10/6, on a £2 10 0 order 5/3.

This shows a net profit on the transaction to the Chemist of 35%; besides attracting the passer-by to the window and considerably augmenting sales generally.

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The above conditions apply only to the United Kingdom.

#### EXAMPLE.

3½ dozen 1/3 size at 12/- net 2 ,, 3/- ,, at 30/- ,,	••••	£2 2 0 0 0	\$ELLS FOR \$2 12 6 3 12 0
Less 10/6 for Window Show	••••	5 2 0 10 6 £4 11 6	£6 4 6

Showing a Net Profit of £1 13 0 on an outlay of £4 11 6. Window Display Material Free and Carriage Paid.

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1/3 size	••••	<b>12/-</b> p	er doz.	net.	
3/- ,,	••••	30/~	,,	,,	
)/ <b>~</b> ,,	****	48/6 114/	99	99	
14/~ ,,	****	114/-	22	99	

#### PROTECTED PRICES.

Phosferine and all of our Proprietary Medicines are supplied on the condition that they are not retailed in the United Kingdom under the following prices-viz., 1/3, 3/-, 5/-, and 12/-.

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IMPORTANT .- Every care is used in corking and packing Phosferine, but occasionally a leaky bottle will pass undetected. Any leaky or faulty bottle should be returned to Ashton & Parsons, Ltd., Ludgate Hill, London, E.C.4, when a fresh supply will be sent and postage refunded.

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JULY 28, 1928.

This Supplement is inserted in every copy of The Chemist & Druggist.

#### SUPPLY SUPPLEMENTS

The clerical work in connection with the posting of spare copies of the Coloured Supplement week by week has increased to such an extent that we have been compelled to reorganise our system of distribution. Our readers will please note, therefore, that in future, instructions can be accepted for not more than six successive issues of the Supplement at a time, and that in every case the name and full postal address should be written on.

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1.—LONDON, N. (Good Class Suburb).—Family Retail and ispensing Business; returns £3,200 under management; incesing; good living accommodation; 23 years' lease; price 2.250, as force. easing; good liv 2,250; no offers.

2.—LONDON, N.—Ready-money Business in working-class cality; good opening for N.H.I. and Photographic; returns, resent rate, £18 weekly; double-fronted shop; small house; but £55; 14 years' lease. Further details on application.

5.—LONDON, N.W. (Main Road).—General Retail, with odak Agency; returns £20 weekly; increasing; double-fronted top, well-fitted and stocked; long lease; no reasonable offer flused.

4.—ANGEL (Near).—Dispensing and Photographic (Kodak); turns £1,500, rapidly increasing; large shop, in very good osition; house sublet £2 weekly; long lease; price to be rranged; part payment entertained.

5.—MIDDLESEX (Good Class Locality).—General Retail and ispensing Business; increasing turnover, present rate £45 teekly; estimated value of stock-and fixtures £1,309; lock-up top; excellent position. Further details on application.

6.—LONDON, N.W.—Herbalist Business in busy main noroughfare; returns £30 weekly; very high rate of profit; ouble-fronted shop; small house; price about £1,200.

7.—MIDDLESEX (Few Miles Out).—General Retail and Disensing; returns £1,400; double-fronted shop in main road; very ood house, garden; rent £60; owing to very bad state of endor's health, this business must be sold without fail, and in refer to do so £800 will be accepted; there is scope for much accepted.

-SOUTH WALES .- General Retail and Photographic; no 8.—SOUTH WALES,—General Recall and Photographic, no N.H.I., but scope for same; returns approach £4,000, increasing weekly, last week being £86; main road position, best in town; stock and fixtures about £1,450; 12 years' lease; rent £150; terms £750, plus valuation; perfectly genuine.

9.—YORKS.—For disposal, Business dealing in Surgical Instruments and Appliances, Toilet Goods, etc.; good opening for Chemist; returns average £1,000; gross profit 51 per cent.; double-fronted shop, main road; small house; new lease will be granted; price £650.

10.—SUSSEX.—General Retail and Photographic; returns approach; £2,000 per annum; net profit £475; double-fronted lock-up shop, main road position; 17 years' lease to run; price £1,100.

11.—EASTERN COUNTIES (Large Town).—Light Retail Business; returns present rate £1,100 p.a.; double-fronted shop; 7-roomed house; private entrance; 20 years' lease; very low rent; price for quick sale, £550.

12.—NORWICH (Near).—Country Retail Business, with Wines and Spirits; very old-established; returns £2,250; excellent house and fruit garden; vendor is desirous of selling business and freehold together, and will consider a reasonable offer.

13.—HOME COUNTY.—General Retail, with N.H.I. Dispensing; returns £2,000 under management; double-fronted shop; good position; convenient residence; new lease; offers invited.

14.—ESSEX (Few Miles from Coast).—General Retail Business with Kodak Agency; in good position in growing district; returns exceed £30 weekly, increasing; main road position ('bus stop); shop beautifully fitted in oak; ample stock; flat over pharmacy with bathroom; held on lease; practically no opposition; terms, £300 goodwill, plus valuation.

lessrs. O. & Co. desire to emphasize the necessity of periodical Statement of Account by which means one Profit, the Value of Business, &co., can be etermined. Involving as this does the labour of tocktaking and Valuation, it is often omitted and ventually becomes confusion and loss.

# **Valuations for Stocktaking**

Messrs. O. & Co. are prepared to under-take these essential duties and make Special Terms for such service.

DRRIDGE & CO., 56 LUDGATE HILL, LONDON, E.C.4

## The Association of Manfg. Chemists, Ltd.

Business Agency, Transfer and Valuation Department

Head Offices-Kimberley House, Holborn Viaduct, London E.C.1 (and at 2 Bixteth Street, Liverpool).

PARKIN S. BOOTH, Accountant and Values.

"Phone: City 1261-2-3

#### BUSINESSES FOR DISPOSAL

1.—BLACKPOOL.—Recently established Chemist's Business, on lease 15 years, at rental of £52 for first 5 years and £76 for remainder; returns £42 per week; stock approximately £400; page for quick sale, £1,850. Further particulars on application. (161)

2.-WARKS.-Old-established Business, Chemist and Optician; on lease with 5 years to run, with option of purchase; rent £50 p.a.; house attached let off £50 p.a. on monthly tenancy; returns £16-£17 p.w. Full particulars on application. (155)

5.—BRIGHTON.—Betail Dispensing Business; premises consist of single-fronted shop; 15 ft. frontage, with dispensary and large basement; held on lease 17 years at £52 p.a. inclusive; returns average £20 p.w.; can be increased. Full particulars on application. (147)

4.—MANCHESTER (District).—Old-established Dispensing Chemist Business in good class suburb on a yearly tenancy at £120 p.a.; let off £117; returns average £27 per week, all cash; excellent opportunity as quick sale is desired; good reasons. (172)

5.-DURHAM CO.-Chemisi Business for immediate disposal; lease can be arranged at £30 p.a. rent; takings £17; Kodak and Ucal Agencies; good living accommodation. (174)

6.-STAFFS DISTRICT.-Excellent opportunity for qualified man. Drug and Photographic Store on lease 5 years to run at £40 p.a.; returns £10 per week; could be easily trebled; good living accommodation; full particulars on application. (169)

7.-HULL.-Dispensing and Family Chemist Business in busy thoroughface (which will shortly become a main road owing to alterations); rent 225 on a yearly tenancy, which can be secured; returns £900 pa.; leck-up shop; good prospects for a young qualified man. Further particulars on application. (170)

8.—ST ALBANS Near..—Retail Business, only chemist in district; population 2,000; lease 7 or 14 years at £30 p.a.; reat and rates £10 p.a.; let off £26; returns average £20 per week. Fulles: particulars on application. (171)

9.—CHESHIBE.—Retail Family Dispensing Business; single-fronted shop; good living accommodation; held on lease, five years, at £150 per annum; established 20 years; returns aver-age £32 per week. Full particulars on application. (152)

10.—We require two or three Chemist Businesses in London, each showing a net profit of £1,000 per annum; bona-fide purchaser. All communications treated with strictest confidence.

11.—LONDON, S.W.—Very old-established Family Retail and Dispensing Business, occupying prominent corner position in busy aboroughtare; lock-up shop with storage accommodation; held on advantageous lease at £100 per annum; returns approximately £2.500 per annum; can be increased under personal management; full particulars on application. (148)

12.—PLYMOUTH.—Very old-established Betail Dispensing Business; for immediate disposal owing to illness of owner; lease will be granted; part let off at £23 12s. p.a. to excellent tenant; returns £40 per week; double-fronted shop; optical testing room; three stock rooms, all on ground floor; recommended; further particulars on application. (162)

13.—LIVERPOOL.—For disposal, owing to ill-health, Chemist and Druggist's Business; lease can be obtained; rent £65 per annum; excellent living accommodation; returns average £17 per week; price for lease and goodwill £50; fixtures and fittings £175; stock approx. £300; fullest particulars on application.

Stocktaking and Valuation of Businesses undertaken at moderate inclusive fee. Chemists are invited to consult us in respect of their requirements in connection with sale or purchase of businesses. Chemiste in the North are requested to communicate with our Liverpool Offices.

### BERDOE &

CHEMISTS' VALUERS, AND TRANSFER AGENTS, 41 Argyle Square, KING'S CROSS, W.C.1

(One minute from St. Paneras and King's Cross Stations.) (One minute from St. Paneras and King's Cross Stations)

1.—SOUTH-WEST OF ENGLAND (Seaside Resort).—Goodclass Retail, Dispensing and Photographic; returns over £2,000,
increasing; good profits; excellent house and large shop; fully
stocked; price, with freehold, £5,500.

2.—SOUTH COAST.—Good-class Retail Dispensing and Photographic Business in prominent position; returns average £2,000,
scope for increase; same hands many years and retiring; price
£1,500.

3.—DEVON.—Old-established Cash Retail, with Optics; main road position of large town; net profit over £800, audited accounts; illness necessitates an early sale; price about £2.000.

4.—ESEX.—Unopposed good-class Pharmacy in health reson; returns over £2,000; no N.H.I.; net profit £525; audited figures; good house, garage, and large garden (à acre; owner retiring; price, with freehold, £1,650.

5.—WILTS.—Unopposed Mixed Connery Retail, returning £1,150; net profit £400; large house and good garden; ampa storage room; owner going abroad; price, with freehold, £1,425.

6.—KENT COAST.—Light Retail Business in growing residential district; returns, under management, £1,158; plenty of scope; modern house; well fitted and stocked; price £850.

7.—MIDLANDS (Small Market Town).—Good-class Family Retail, with Kedak and Optics; returns about £900; good profits; well-fitted shop and good stock; price only £450.

8.-LONDON, N. (Close to City).-Good Cash Retail, with Kodak Agency and large Panel; returns £40 weekly; good profits; rent £50; sub-let £144; main road position; price for early sale £450.

9.-LONDON, E.-Quick Cash Retail, with good Photographic connection; in busy main road position; returns under manager £1,500; plenty of scope; long lease on profit rental; price £1,100.

10.—LONDON, N.W.—Very profitable Cash Retail, with N.H.I.; returns £1,955, under manager; net profit £600; audited books; good main road position; long lease; good house; price £1,250, or offer.

#### STOCKTAKING VALUATIONS:

We are now booking dates for August onwards and invite early application. Terms on application. Estab. 1870. Telephone, Terminus 3574.

#### ERNEST J. GEORGE

If you have a BUSINESS TO SELL, doing £40 or over with scope for increase, I can quickly and privately find you a purchaser. Send particulars in full confidence.

7 SOUTHAMPTON ROW, LONDON, W.C.1

3 St. Paul's Close, WALSALL Tel.: 774@ 1000 Walsall

## THOS. TOMLINSON & SON

CHEMISTS' VALUERS, TRANSFER AGENTS, AND EXPERT STOCKTAKERS,

45a MARKET STREET, MANCHESTER, Established over Half a Century.
Telegraphic Address: "Tomtom."

#### CHARLES C. MARSDEN

CHEMISTS' VALUER, TRANSFER AGENT & STOCKTAKER 44 SHOLEBROKE VIEW, LEEDS.

I have four clients wanting sound concerns from £1,000 to £3,000, cash waiting.
If you wish to sell your business, write me in confidence.
In the West Riding, businesses for sale at £300, £400, and £90.0

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MANUFACTURING CHEMIST has about 3,000 sq. ft. on ground floor available, conveniently situated near City of London, and could undertake economically the

DISTRIBUTION, PREPARING or PACKING of any Wet or Dry Specialities

and wishes to receive propositions in this connection. Write P.C.B. 41 29, Office of this Paper. 

#### BUSINESSES FOR DISPOSAL.

s. for 50 words or less; 6d. for every additional 10 words or less, prepaid.

the Advertiser may if preferred have replies addressed to this Office, and forwarded on payment of an additional charge of 1/-.

DLACKPOOL.—Good-class Business for Sale; busy main road; donhle-fronted windows; excellent modern fittings; living ecommodation attached; electric light throughout; returns for he last two years, £2.415 and £2.513 respectively; andited ecounts; rent £210 per annum; cheap for quick sale. 171/30, like of this Paper.

ISSEX.—Good-class Cash Retail; fine corner position; doublefronted shop; takings £32 weekly; ample scope for coniderable increase; rent £130; let off £50; well stocked; owner eaving the trade; price £600, or offer. 178/25, Office of this aper.

ANCS.—Well-established Retail and Dispensing Chemist's Business; lock-np premises, held on lease; conveniently tted and stocked; turnover approximately £2,000 per annum; rice £1,600. Pull particulars on application. 173/7, Office f this Paper.

ANCS.—2450 purchases established Chemist's Business in thickly populated area; neglected, under management, for ast three years; turnover £700; Kodak Agency; rent £26; on agreement; large scope for increase by energetic man; tock and fixtures in good condition; gennine reasons for disosal. 178/55, Office of this Paper.

ANCASHIRE.—Two Shops, situated in principal thoroughlares; established over 20 years; rents about £57 each early; at present taking over £60 weekly; good profits; previous o trade depression were taking over £120 weekly; owner ettring; price for two £2,400, or will sell separately, 175-17, there of this Paper.

ANCASHIRE.—Good General Retail, Dispensing and Photographic Business in industrial area; Kodak and Ucal gencies; fitted in mahogany and well stocked; district increasing; returns, last year, £1,315; low rental and overhead charges, blich are more than covered by N.H.I.; price £1,200, or near fer; owner leaving Retail. 173/5, Office of this Paper.

IIDDLESEX (10 miles Charing Cross).—Prosperous manufacturing town, 36,000 population; rapidly increasing; enuine Retail, Dispensing and Prescribing Business; £1,400 year; good prices; net profit quite £500; double-fronted shop, ood house and small garden; rent £60; rates abont £13; for the uck sale £800; owner giving up husiness. 177'24, Office of his Paper.

L. SEASIDE TOWN.—Old-established Chemists; central corner position; well stocked; Kodak Agency; returns 2,400; excellent house; price about £2,000; no triders, please. 71'10, Office of this Paper.

YEAR MATLOCK (genuine), — Well-known old-established Chemist's Business in best shopping position of husy tarket town; good reasons for selling; well-fitted and stocked harmacy; double-fronted; excellent house, garden, warehouses, and garage; electric light and gas; rent £50; good Kodak gency, Panel, and lease; takings average £40 weekly; excelent opportunity for optics; population of district 22,000; price or quick sale, £1.650; personal investigation invited. Apply 75.19, Office of this Paper.

ORTH TINE.—Country Business; recently established; approximate returns, 3 years, £630, £862, £952; Kodak gency; lock-np shop; low rent; opening N.H.I. and increase gricultural; centre for visitors; opportunity qualified man; rice £250 for business fixtures; stock suit purchaser if quired; no Chemist; part price could remain to suitable buyer king the lot; valuation terms also considered; no triflers; amp further details. 177/32, Office of this Paper.

OUTH YORKS.—Unique opportunity to acquire a smart, progressive little Pharmacy in an industrial area; turnover ider management £650; Kodak Agency; new stock and fixtures; w rent; main road position; price £350. 178/2, Office of this aper.

"XCEPTIONAL OPPORTUNITY.—Splendid corner position, main street, market and factory town, London-Exeter ad; donble-fronted shop and dwelling-house, with possession; aly £1,300. 150/542, Office of this Paper.

\*\*XCELLENT opportunity for smart Chemist; fine corner shop; well fitted and stocked; now under lady management; kings over £1,000; long lease; rent £90; price £650; London. 73 24. Office of this Paper.

OR Sale, recently established Pharmacy; lock-up; rent 12s, weekly; price £250; situated in busy street, Midlands; good caing for beginner, 175/25, Office of this Paper.

HAVING decided to go to Australia, proprietor wishes to sell genuine Chemist Business without delay; throver practically £4,000; going ahead rapidly; acknowledged best position in large town in South Wales; will accept one year's net profit for premium and valuation of stock, fittings, etc., in order to sell quickly. Apply 130 547, Office of this Paper.

HERBALIST Business; main road; old established; lease; N.W. district; nicely fitted; thickly populated; big scope; exceptional good position; owner retiring. 176/12, Office of this Paper.

HIGH-CLASS Family and Dispensing Business in growing residential area; beautifully fitted; easily worked; well stocked; 15 years at low rental; Kodak Agency with two subagencies in onter district; returns about £4,000; accountant's figures; excellent house and garden; separate entrance; good reasons for disposal. "Surrey," 177, Office of this Paper.

UNIQUE opportunity; S.W. England.—For Sale, Mixed Business, including Shipping trade; Kodak Agency; returns average nearly £50 per week; good house and garden attached, with fruit trees and garage; held on lease; no near opposition; very low rent and rates; heatthy surroundings; cash havers only. Further particulars on application. "Chemist," 178/16, Office of this Paper.

£650 OR NEAR OFFER.—Genuine, well-established Cash Business; returns over £900; net profit £270; scope for increase; rapidly growing district; good house attached; electric light throughout; rent £64; rates under £20; corner shop; main road; 1.500 N.H.I. yearly. S. H. Small, Kingsholm, Gloucester.

£6,000 TERNOVER.—Within 40 miles of London; good-town; satisfactory reason for disposal. Full particulars to gennine buyers, giving references. Apply "F. S.," 173/15, Office of this Paper.

#### BUSINESSES WANTED.

LONDON, S.E. or S.W.—Cash Business (Store lines) doing £30 to £100 a week, with Kodak, Rexall or Ucal Agencies; no Optics or N.H.I.; rent not to exceed £100 a year, with house attached; stock must be up to date (about £1,500) (exclusive of shop rounds, fittings, etc.); electric lighted and up-to-date window and fittings. Quote spot cash price only to "Gentian," 173 32, Office of this Paper.

BUSINESS required, Yorkshire district, doing approximately £1,500 or over; good house; healthy locality; advertiser has good industrial business in Midlands; will consider change or offer; turnover over £3,000. 179'10, Office of this Paper.

WANTED to purchase Business in a seaport town where there is a connection with Ships' Medicine Chest trade. Apply 173/25, Office of this Paper.

#### AGENCIES.

BRAZIL.—Brazilian firm, with large experience in foreign import husiness, is desirous of obtaining the representation of large English exporter of barhwire, timplates, galvanied wire, hardware, chemicals and raw materials in general. For references please apply to Paper Distributors, Ltd., Snow Hill, London, E.C.1. British Chamber of Commerce, and banks operating in Brazil; English correspondence. Address, Mayall & Cia, P.O. Box No. 1,322, Rio de Janeiro, Brazil.

ESTABLISHED Firm of Manufacturers, with regular representation Southern and Midland Counties, seek Agency for saleable line to Chemists and Stores, to run with own products on distributing basis; Perfumery or Tollets not entertained. Write fullest particulars; foreign correspondence invited. 171/25, Office of this Paper.

FOR biggest German Garlick Preparations company, Head Agent required. Call Dr. Eppenstein, 3 Broad Street, Brighton.

#### PARTNERSHIP.

PHARMACIST with spare time is open to act as Superintendent; would consider Partnership and provide capital; London. Reply to "Pharmacist," 1 Beauchamp Road, East Molesey, Surrey.

#### PREMISES TO LET.

FINE Corner Chemist's Shop in modern terrace of shops with valuable and exceptional rights of monopoly in this presperous and rising resort to Let. Apply Owner, Minora, Meadway, Shoreham.bv.Sea, near Brighton,

#### SITUATIONS OPEN.

#### RETAIL.

#### [HOME.]

6s. for 40 words or less; 6d. for every additional 10 words or less, prepaid.

THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, GLOUCESTER.

A PPLICATIONS are invited for the post of Head dinner provided. Candidates must hold the Pharmaceutical Society's qualification; Hospital experience preferred. Applications stating age, salary required and full particulars of previous appointments and experience, accompanied by three recent testimonials, to be forwarded to the undersigned on or before August 1st next. The appointed candidate will be required to commence duty on August 22nd. F. J. Symons, Secretary.

BIRMINGHAM.—Qualified Assistant for good-class Retail, Dispensing and N.H.I. State full particulars, age (not over 30), height and salary required, with names of two last employers, to "Chemicus," c/o Soutball Bros. & Barclay, Lower Priory, Birmingham.

BRIGHTON.—Lady Assistant; outdoors; no Sunday duty; Counter and Dispensing. State age, height, salary required, when disengaged, and enclose references and photo. E. R. Jones, 12 Matlock Road, Brighton.

GRIMSBY.—Locum required, unqualified, for two weeks, commencing August 20 (or August 27). State age, terms, experience, and enclose photograph if possible. 177/38, Office of this Paper.

LONDON.—Qualified and unqualified Assistant, with know-ledge of Photography, required shortly. Apply by letter, stating age, experience and salary required, to the Secretary, Shadforth Prescription Service, Ltd., 63 Grove Road, London, E.3.

LONDON, S.E.—Unqualified Assistant required for industrial area; must be young and energetic. Give full particulars of experience, and state age, salary required, and when at liberty. 176/5, Office of this Paper.

L ONDON.—Business-like Manager (gentleman), about 30, wanted; qualified; able to take responsibility and keep shop smart; understand Photo and Window-dressing and Store business; three kept; good-class training essential; references must bear close investigation. 178/26, Office of this Paper.

L ONDON, E.C.—Qualified Manager required for working-class Retail and N.H.I. business; neglected, and offers good scope for worker; salary £4 week and commission on takings. Apply, stating age, experience, references, etc., 177/33, Office of this Paper.

L ONDON.—Qualified Manager required for small branch business, with N.H.L., in working-class neighbourhood; must be obliging and energetic. Apply, stating age, experience, references, salary required, to 177/330, Office of this Paper.

MANCHESTER SUBURB.—Wanted, at once, Junior (male); must be good Dispenser, Window-dresser, and accustomed to high-class Toilet business and Photography. Only those with real experience need apply; age, references, photo, and salary required. 178/6, Office of this Paper.

OT. BARTHOLOMEW'S HOSPITAL, ROCHESTER, KENT— 126 beds. Lady Assistant Dispenser required, August 9; Apotbecaries' qualifications necessary; salary £120 per annum; previous Hospital experience preferable. Applications, stating full particulars, together with copies of three recent testimonials, to be addressed to the Secretary.

S.E. DISTRICT.—Junior required, accustomed to good-class trade. State age, salary, when at liberty, and all particulars to 179/5, Office of this Paper.

A SMART, active Assistant required to help develop new business; must be capable; knowledge of Photography and good Window-dresser; permanent and progressive position.

Brodribb, 4 King's Cross Bridge, N.1. Telepbone: Terminus

A SSISTANT wanted (male), immediately, accustomed to best-class Retail and Dispensing, for a few weeks. Gregory, Aldeburgh-on-Sea.

A SSISTANT (lady); young; capable; quick Dispensing and smart Counter experience essential; commence duties August 7. Apply, by letter or personally, Sterlings, 10 Bromley Hill, Kent.

A SSISTANT required, with Counter and Dispensing and Photographic experience; good Window-dresser essential. Apply Rowland E. Baldry, 330 Portobelle Road, London, W.10.

A SSISTANT; qualified preferred; lady or gentleman; age not over 35; must be good Window-dresser, with a knowledge of Photography and a reliable Dispenser. Apply Cartwrights, Chemists, 171 Holloway Road, N.7.

A SSISTANT (South London) as Locum, view to permanency; used to modern competitive business; original ideas and initiative appreciated. In reply please state age, references (no copies), salary required. 178/19, Office of this Paper.

BRANCH Manager or Manageress wanted for August; Optics an advantage; permanency offered to suitable applicant. Full particulars requested in first letter. Ryley Pratt, Chemist, High Street, Barnet.

CHEMIST.—Qualified Assistant wanted, early as possible. Applications, stating experience, age, wages required, etc., to Secretary, Halifax Industrial Society, Ltd., North Parade, Halifax, endorsed "Chemist."

D. & P. ASSISTANT, Junior Bromide Printer (either sex) to help with enlargements; permanency with prospects to willing worker. Full particulars apply Hines, Chemist, 86 High Street, Whitechapel, E.1.

DIRECTOR.—Qualified Manager required to act as Director on the board of a small London firm; would be expected to invest at least £100 in shares; fullest details available. Apply, with particulars of experience, to "Strictly Coufidential," 129/509, Office of this Paper.

PEMALE Supervisor, age about 30, for staff of girls; one from Retail Drug trade preferred; permanency. Raybould, Whitebouse & Co., Ltd., Chemists, Dudley. Est. 1878.

IMMEDIATELY, qualified Assistant, elderly, or lady not objected to; must have good references. Apply C. Lawrence, Ltd., Watling Street, Gillingham, Kent.

JUNIOR Assistant (lady) required third week in August for good-class Dispensing and Family business; indoors; short hours; London suburb. State age, experience, and salary required; enclose photo, which will be returned. 168/6, Office of this Paper.

JUNIOR or Improver wanted, lady or gentleman, for a fort-night from August 6, mostly for Insurance Dispensing under supervision. W. Varley, 8 East Reach, Taunton.

JUNIOR Assistant wanted at once for good-class Dispensing and Retail. Apply, giving usual particulars, to Feltwell & Son, 90 Church Road, Barnes, S.W.13.

JUNIOR Assistant required (one just finished apprenticeship would do), with good experience of Dispensing; salary £2 5s., increasing after six months to £2 10s. Apply with photo (if possible) and state references to H. Reynolds, 9 Becket Buildings, Worthing.

JUNIOR Assistant, unqualified, to start August 13; used to quick cash trade, working-class, and with knowledge of Photography. State full particulars, including references and salary (outdoors) required. Winters Chemists, Ltd., 324 Bethnal Green Road, E.2.

LADY Chemist required as Assistant in branch shop in North of England. Apply, stating experience, salary required, when at liberty, to Mr. Long, 1 Beech Grove, Monkseaton.

 $L^{\rm ADY}$  Pharmacist required as Senior Assistant, accustomed to high-clase business; Minor qualification essential; age not under 30; residential district, provinces. Please send full particulars to 175/26, Office of this Paper.

LADY, qualified, for high-class Pamily and Dispensing business in S.E. London; Counter experience essential; comfortable permanency. State age, experience, and salary required. P. B. Phillips, 111 Plumstead High Street, S.E.18.

L ADY Assistant, with Dispensing and Counter experience, required for London district. Apply to 130/550, Office of this Paper.

LOCUM required for good-class business, Loudon area, August 25 to September 7 inclusive; £6 week; personal interview necessary. 130/552, Office of this Paper.

LOCUM, qualified, to manage Light Retail and Dispensing business near Birmingham for fortnight, commencing Angust 20; salary £5 weekly (indoors) and fare paid both ways. Please give particulars of age, experience, and references to Rex Allen, Chemist, West Bromwich.

MANAGER; qualified; permanency to right man; Optics an advantage; state salary, etc. "H. B.," 56 Mile End Road, E.1.

UALIFIED Branch Manager required for small branch shop; must be used to working-class trade; good Salesman; lart and trustworthy.—Apply, stating age, etc., experience and lary required; enclose photo (returnable); interview by appintment. C. W. Thornton, M.P.S., 62 Dewsbury Road, Oseett.

UALIFIED Junior, male, under 30; permanency. Please state full particulars, wages, etc., in first letter to Hope, ark Street Pharmacy, Southend-on-Sea.

UALIFIED Manager wanted for central establishment; must he energetic, with initiative and modern ideas of display; permanent and progressive post for a man of real ability. pply in first instance by letter, giving full details and brief tiline of career, prior to interview. Address reply "Qualified," & J. Thompson & Co., Ltd., 10 High Street, Oldham.

UALIFIED Locum, age 24-30, required immediately for London suhurbs; permanent position open to suitable pplicant. Apply to 130/548, Office of this Paper.

UALIFIED Manager wanted, permanency, with West-End experience. Write, stating age and salary required, to D. Murphy, 143 Charing Cross Road, W.C.2.

UALIFIED lady wanted for General Retail and Dispensing business to help in two shops. Please state experience, lary, etc. Apply, by letter or personally, to E. T. Wavell, hemist, 40 Green Wrythe Lane, Carshalton, Surrey.

UALIFIED Junior required heginning of August; Dispensing and Light Retail. Full particulars as to age, referend salary required. Osborne, 118 Broad Street, Reading.

UALIFIED Assistant, about 30, at once, for branch; East End; must be smart; good Salesman; experienced all anches, especially Photography. Full particulars to Hadfield, 36 Prince Regents Lane, E.16.

PALIFIED lady or gentleman (young) immediately for thranch shop; N.H.I. and Counter. Apply, stafing salary quired and full particulars, to F. H. Vyse, Birchill Street, lasall.

UALIFIED Assistant wanted at once, to take charge of Branch Pharmacy. Please euclose recent references and ate age, salary required, with earliest possible date for comencing duty. 178/31, Office of this Paper.

UALIFIED Assistant (male) wanted, August 20; well up in Dispensing; permanency; age about 25. Pope Roach & on, 71 St. James's Street, S.W.1.

UALIFIED Branch Manager to act as a Director; must be willing to take shares in the company; all communications ill be treated confidentially. Apply W. Shadforth, Governing irector, Shadforth Prescription Service, Ltd., 49 King William reet, London Bridge, E.C.4.

ECENTLY qualified male Assistant required immediately; indoors. State salary required, when available, and usual rticulars to Exors. of N. Brunyee, Chemist, High Street, towle, Scunthorpe, Lincs.

ELIABLE Dispenser and Salesman, with good experience; steady worker; salary in conformity with efficiency; peranency; full particulars first, with references; wanted latest ugust 21. 178/14, Office of this Paper.

MART Assistant, with good Dispensing and Counter experience, required for London suburb. Apply to 130/549, Office

TRGENT.—Wanted, Liverpool, elderly qualified man immediately. 130/554, Office of this Paper. WANTED, a young Junior, chiefly for Stock and Store. Apply Allan Bone, Chislehurst.

WANTED, Locum to take charge of branch, either from August 13 to 25 or September 9 to 22; must be entirely ustworthy. Bell, Chemist, Chapel Street, Rugby.

YOUNG qualified Assistant required by August 7; one accustomed to quick Retail and N.H.I. Dispensing business; ust he good Salesman and quick Dispenser; permanency; S.E. ondon district. 130/553, Office of this Paper.

VOUNG lady, August 7-18; Dispensing and Stock; must be used to Photography and Cameras; no N.H.I. or Sunday uty; hours 9 to 7.30 p.m., Wednesdays 1 p.m., Saturdays 30 p.m.; 2 hours off for meals. Please send particulars, with dary required, to F. Neal, 56 Knight's Hill, West Norwood, E.27.

#### WHOLESALE.

ONDON.—Representative required, having connection with Manufacturing Houses; state previous experience; salary nd commission to right man. 130/543, Office of this Paper.

ONDON.—Smart Representative wanted, calling Chemists, Hairdressers and Stores; good commission and contributory xpenses to one carrying non-competitive lines; light samples. 77/28, Office of this Paper.

WEST OF ENGLAND.—Live commission man wanted carrying non-competitive lines, and calling Chemists, Hair-ressers and Stores; very low-priced Toilettes and Perfumery, howing large profits to retailers; good commission to right lan, with car preferred. 177/280, Office of this Paper.

THEMIST, with Minor qualifications, wanted as Junior Chemist in Wholesale Druggists in London. Apply "Pharacist," 130/534, Office of this Paper.

QUALIFIED Chemist required, with knowledge of the making up of Toilet Preparations for Wholesale trade. Apply by letter in first instance, stating previous experience and salary required, to 130/551, Office of this Paper.

REPRESENTATIVE, on commission basis only, with connection amongst Chemists and Hairdressers, required immediately for Northern Ireland; high-class Toilet Preparations, Sundries and Proprietary lines. Full particulars to 130/544, Office of this Paper.

REPRESENTATIVES required for all parts to sell Medicinal Preparations, on commission; must be live men; representatives carrying other lines not objected to; excellent scope and good prospects for the right men. 177/5, Office of this Paper.

REQUIRED, in the Home Despatch Department of Londom Wholesale Druggists, a competent Packer and Checker; only those who have filled a similar position need apply. State experience fully to 130/555, Office of this Paper.

SMART Traveller required, with own car, for Perfumery and high-class French Sundries; preference given to candidates with sound connection among best-class Chemists, Hairdressers and Stores in London and South Coast. Send fullest details, in writing, to "T. H. B.," 89 Great Eastern Street, E.C.2.

TRAVELLERS; side line; remunerative; men with good connections only. Apply (in confidence) to Box 493, c/o C. Mitchell & Co., 1 Snow Hill, E.C.1.

WANTED, ladies of good appearance and preferably with sales experience for demonstrating Perfumery articles. Write, giving full particulars and experience, to 130/545, Office of this Paper.

WANTED, by competitive house, experienced Representative, possessing car, to travel provinces, calling upon Retail Chemists; several accounts open; state remnneration required; good salary paid to first-class salesman. 177/36, Office of this Paper.

YOUNG man in Chemical Warehouse; knowledge of packing chemicals essential. P.C.B. 41/7, Office of this Paper.

#### SITUATIONS WANTED.

#### RETAIL. [HOME.]

A.A.A. -EXPERIENCED Assistant, unqualified, 33, counterman, Window-dresser; knowledge Photography; cammanage; excellent references; Manchester or district preferred. 177/27, Office of this Paper.

A.A.A.—ASSISTANT, 24, unqualified, active, trustworthy, district; permanency; disengaged one week. 177/22, Office of this Paper.

A.A. -LOCUM or permanency; Dispensing, Counter, Windows, Photography, Prescribing; unregistered; energetic; trustworthy. "Locum," 42 Trigon Road, S.W.8.

A.—WEST-END Assistant requires afternoon and evening duty; any hours. "Statim," 16 Stanwick Road, Kensington, W.14.

A.—ASSISTANT, 25, single, College trained, 9 years' high-he, class Pharmacy, experience all branches, seeks per-maneucy; disengaged August 4. "Assistant," c/o Guibell's Pharmacy, Finchley Road, Golders Green, N.W.

A CAPABLE Assistant, unqualified, desires engagement; age 27; married; sound all-round experience. "W.," 20 Rylstone Road, Easthourne.

A FULLY qualified Locum; disengaged early September; whole or part-time engagement; Bournemouth district. "Pharmacist," 17 St. Albans Crescent, Bournemouth.

A LL-ROUND Senior, Manager, best varied experience, desires permanency; widower, home stored; Surgical, Prescribing, Dispensing, Photographic; articled, studied, unregistered; disengaged; or Drug Store, view purchase. "J. W. C. N.," 21 Alhion Place, Maidstone.

A S Locum (referred Pharmacy); experience required in London preferably, not essential. Heafield, 26 Church Street, Swadlincote, Derhyshire.

AS Locum or holiday relief with Doctor, Chemist or Insti-tution; free until the end of September; age 21; 4 years. London experience; passed Part I; excellent references. 175/24, Office of this Paper.

AS Locum; qualified; disengaged now; long experience in all branches; active; excellent references; terms moderate. "S. C. I.," 54 Priory Road, West Hampstead, N.W.6. 'Phone: Hampstead 7151.

A S Manager, Assistant; temporary, or permanent, or locumf qualified; disengaged; Dorset or Hants. Green, Abbotswood, Grove Lane, Christchurch.

 ${\bf A}^{\rm SSISTANT,}$  unqualified, trustworthy, first-class general alleround experience, seeks permanent post about end of September; personal interview. 175/14, Office of this Paper.

A SSISTANT, unqualified, 22, seeks situation; South preferred, not essential; excellent all-round experience and references, "Reliance," 90 Bovill Road, Honor Oak Park, S.E.23.

A SSISTANT; unqualified; Part I; 6 years' experience, Dispensing, Connter, Windows, Photography; Loudou or suburbs; disengaged Angust 4. L. Temperton, c o 5 The Parade, Riverhead, Sevenoaks, Keut.

A SSISTANT, 26, unqualified, 11 years' experience, Dispensing, Photo, Optics, good Salesman, moderate Window-dresser. capable of taking entire charge, excellent references, desires change, 177/8, Office of this Paper.

A SSISTANT, 26, 8 years' high-class Retail experience, unqualified, desires post; free September 17. Harris, 78 Church Road, Hove.

A SSISTANT, 23, requires temporary position, end July to middle of September; 4 years' experience; excellent reference; London preferred. "Miles," 77 Bromfelde Road, 8.W.4. ence; London preferred.

AT liberty, immediately, smart, energetic, qualified gentleman desires berth, either North or seaside. Apply "Amhitious," 174/33, Office of this Paper.

CHEMIST, excellent experience, free Angust 10, rennires Locum work or Managership; Birkenhead, Liverpool, Wallasey, Wirral; interview arranged. 175'59, Office of this

CHEMIST, with all-round experience and Optical qualification, desires position as Manager; London or vicinity preferred; good knowledge of Photography. Apply 177/16, Office of this Paper.

CHEMIST'S Assistant seeks position as Dispenser, with Doctor, in Hospital, or shop; referred Pharmacy; good references; moderate salary; London preferred. Griffiths, 25 Hamilton Road, Harrow.

COUNTER, Dispensing and Photographic; unregistered: middle-aged; highest references; London. George Fall, 105 Tottenham Lane, Hornsey, N.8.

DISPENSER-BOOK-KEEPER (lady), 9 years' experience, seeks position with Doctor or Hospital; permanent or Locum; free September. 178'30, Office of this Paper.

L'NERGETIC young man, 24, qualified, desire permanency as Manager or Senior; experienced Window-dresser. Photo, Toilet and quick Dispenser. Metcalfe. "Kenford," Watling Street, Church Stretton, Shropshire.

EXPERIENCED Counter, Dispensing; highest references; tall; abstainer; West-End 7 years; permanency; free any week. "Mac," Otley House, Cheltenham.

EXPERIENCED, confidential Manager, just sold own business, desires position of trust where integrity and enthusiasm will be appreciated, and preferably where there is a possibility of succession within reasonable time; Thames Valley or Southern Counties; turnover about £2.000. 175 29, Office of this Paper.

JUNIOR Assistant.—Mr. J. G. Wallbridge, 227 Kensington, Liverpool, recommends his junior assistant, formerly appren-tice; Liverpool district preferred; passed Part I. "E. H. G.," c/o above address.

LADY Dispenser-Book-keeper, 8 years' good experience, desires post, Doctor, Hospital, Institution. "B.," "Lismore," West Road, Guildford.

ADY Dispenser (Hall), experienced, requires whole or part-time post with Chemist or Doctor. 173'32, Office of this Paper.

LIVE MANAGER, at liherty shortly; South Coast preferred; good salary required; excellent references. "M.P.S.," 178/36, Office of this Paper.

L OCUM; qualified; highest references and experience; August 4 to 21 inclusive only. Jenkins, "Greenmo Ferndale, Teignmonth, Devon. Greenmount.

L OCUM, Manager; qualified; elderly; widower; 20 years own business; city, seaside, country, comprehensive experience; undeniable references; np to date; active; trustworthy; free July 30 to August 22 and September 8 onwards. Roberts, co Bowler, Chemist, Belper, Derbyshire.

LOCUM or season; seaside or country; fully experienced Dispenser and all-round man; disengaged August 1. Benson, 4 Alexandra Road, South Woodford, Essex.

LOCUM; experienced; middle-aged; abstainer; disengaged Angust 1 to 10; this period or part accept reduced fees; Loudon or near; also vacaut Angust 27 onward; moderate salary. "Pharmacist," BM/ZP6N, London, W.C.1.

LOCUM; middle-aged (14 years Manager); efficient all branches; practical, conscientious worker; low terms for early engagement. "Fairley," Beutley, Redditch.

LOCUM; disengaged; middle-aged; experienced all branches of business; accustomed management. Field, 60 Loftus Road, W.12.

L OCUM; qualified; elderly; disengaged shortly; or easy permanent engagement; salary not so essential as comfortable position. "Chemist," 35 Capping Street, Chester.

L OCUM; qualified; Dispensing, Counter, Photo; capable reliable; free July 30-Angust 11. "Chemist," 32 I mount Road, Brixton Hill, S.W.2.

L OCUM; disengaged Angust 6 to 16; good references; experienced Counterman and Dispenser; qualified, "Chemicus," & Kingscote Road, Addiscombe, Croydon;

OCUM; qualified Chemist; first-class all-round and recent experience; disengaged. Fitt, 36 St. Stephen's Road, Norwich.

Locum; LOCUM; free until Angust 17; highest recommendations; entire charge. "Chemicus," 12 Upper Richmond Road, Essi Putney, London.

OCUM; tall; qnalified; 31; at liberty Jnly 30 to August 11 and after August 25. F. R. Smith, c/o Mr. Redding, High Street, Wainfleet, Lincs.

OCUM; reliable; reasonable; disengaged August 13; City, West End and Hospital experience; best references. "Lichen," 404 Essex Road, Islington, N.

L OCUM; qualified; good Salesman; anywhere; best references free Angust 11-14 inclusive and after September 6. 86 Brookbank Road, Lewisham, S.E.

L OCUM Tenens. M.P.S., D.B.O.A., F.I.O., J.C.Q.O.; ex-owner first-class all-round experience; reliable; expert Refractionist; disengaged August 12 onwards; booking. "H.," co Brnces, Chemists, Broadway, Ealing, W.5.

L OCUM; Angust and September free; reliable; excellent references; abstainer; just ont of own husiness; terms moderate "Statim," 178/7. Office of this Paper.

MANAGER, M.P.S., F.S.M.C., 5 years' managing experience used to high-class business, requires permanent progressive position, preferably with living accommodation and in Sonthern Counties; age 28; married; keen, enthusiastic, thoroughly trust worthy, and competent; references excellent. Please send particulars. "J.C.Q.O.," 175/36, Office of this Paper.

MANAGER; qualified; disengaged; ten years' good all-round experience; Devon preferred; not essential. Jones, 35 Bitton Street, Teignmonth.

MANAGER; qualified; experienced; used to complete charge, good Dispenser and Salesman; highest references; Londor preferred; free September 8. 80 Brookbank Road, Lewisham S.E.

M.P.S.: 25; Manager or Assistant; about end of Angast; 75 years' good-class experience. Baskerville, c.o 5 Algitha Road, Skegness, Lincs.

M.P.S., MARRIED, Scot, 33, tall, not afraid of work active, obliging, quick, good appearance and address, seeks permanency; offers. "Chemist," "Homecroft," London Road, Copford, near Colchester.

PART-TIME work required by Student (nearly qualified).

PART-TIME work required by Student (nearly qualified).

PERMANENCY; Assistant; thoronghly competent all brauches excepting Optics; capable management single handed; excellent experience; Midlands preferred, not essential 175/37, Office of this Paper.

POST required by qualified Chemist as Locum or Representative; age 40; active. 173/24, Office of this Paper.

QUALIFIED, 38, just returned from abroad, desires Managership, where free hand will he given, in South of England or London area; advertiser is a proved husiness builder with wide and varied experience; nnimpeachable record of over 20 years; personal interview essential; will pay own expenses. Please give some indication of salary offered and other usual particulars in first letter to 174/36, Office of this Paper.

QUALIFIED, 22, seeks position in Liverpool in high-class business; Photography; good references. Shaw, Queen's business; Pl Place, Lancaster.

QUALIFIED Chemist and Optician (F.S.M.C.) requires position as Assistant in London; young and energetic; excellent references; free end of Angust. 176 3, Office of this

QUALIFIED lady, fully experienced, desires post; Locam of permanent; seaside or country preferred. 176/9, Office of this Paper.

QUALIFIED, 22, seeks post in Liverpool or other South Lancashire town; passed F.B.O.A. with exception of sight testing; capable Dispenser, Photography. 176/15, Office of this

QUALIFIED: 37; thoroughly experienced; first-class references; Manager, Assistant, Locnm; Photography; disengaged. Stephens, 31 Conway View, Harehills, Leeds.

QUALIFIED, all-round experience, as Manager, London and provinces, excellent Prescriber, desires permanency, any locality within 50 miles London; Wholesale or Retail. "Pharmacist," 28 Sonthcliff Road, Sonthampton.

 $\mathbf{Q}^{\mathrm{UALIFIED}}$ , 30, as Locnm; disengaged now. Wilson, 41 Ferdinand Street, N.W.1.

QUALIFIED, 29, good all-round experience, seeks perman-ency; Manager or Senior; Yorkshire or Midlands preferred; liberty month's notice. 177/25, Office of this Paper.

SEASON.—Male, 21, requires berth for season; Connter of Dispensing; previous season experience; free. Jackson 371 High Street, Cheltenham.

CLEAR OUT—your Old or Damaged Stock of Photo Goods.

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l GIVE BEST PRICES for Old Films (damaged, fog-ged or expired dates); Packet Papers. Cards (any sizes), Old Photo Goods or Cameras. Bromide Papers. Plates (all sizes, all makes). Send any goods in the photo line. I buy all, good or bad. Cash per return. A good price for all Cameras. Send them along,

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FIRM, possessing LARGE, MODERN FACTORY, with Facilities for Manufacturing, Packing, and DESPATCH, could accommodate one or two new lines.

Write 129/528, Office of this Paper.

SQUARE" trained man (referred subject required for qualification) requires situation until September in a nod-class Dispensing business. W. Ziman, 66 Kenninghall oad, London, E.5.

NQUALIFIED Assistant; age 39; life experience, Wholesale and Retail; ex-Service man who prefers work to "dole." 4/12, Office of this Paper.

NQUALIFIED, 23, 6 ft. (referred Part II), desires Locum work; good references. Guymer, 26 Eastbourne Street,

NQUALIFIED, married, 37, 6 ft. 11 in., reliable, 16 years' Retail. testimonials, genuinely wants permanency, anyhere. Ellis-Holland, Elm Avenue, Beeston, Notts.

NOUALIFIED Assistant; age 33; height 5 ft. 9 in.; nnmarried; 63 years last engagement; good all-round experience; ate wages. 177/15, Office of this Paper.

VILL any Chemist who requires a reliable, competent, experienced, unqualified Assistant (26) write to 177/20, Office

OUNG lady (Chemist's daughter) desires post with Chemist; Potteries district; small salary to commence. 175/1, Office

this Paper.

OUNG lady desires post in Dispensing; disengaged; Hall qualification; Brighton or within travelling distance; good orker. 8 Prestonville Road, Brighton.

OUTH, 20, Scot (Part I), D. & P., Toilet, Dispensing, desires position, August 6 till end September. Apply 178/8, Office this Paper.

#### WHOLESALE.

LONDON and Southern Counties Representative, with valnable connection, desires offers from Manufacturers roprietary lines; salary and commission, or would consider spenses and commission with weekly drawing, but not combission only; territory worker regularly by own car; satisactory turnover assured if goods are right. "Rex," 130/546, The of this Paper.

A DVERTISER, qualified Chemist, British and Colonial experience, late Wholesaler's Sundries Buyer, previously superingendent limited company, seeks position of trust, Organiser, countancy; sound credentials. P.C.B. 42/13, Office of this

A SSISTANT; reliable; experience checker, laboratory, patents, sundries, wet and dry counter despatch; single; good references; own fare paid. 177/14, Office of this Paper.

OMPRESSED TABLETS.—Experienced in all matters appertaining to the Manufacture of Compressed Tablets, Pills, ic.; sugar and pearl coating; able to control. "R. G. B.," 3 Cloudesley Road, London, N.1.

JENTLEMAN, with unique knowledge of Medical Practitioners in Midlands, free now to undertake medical propaganda r general representation. 175/40, Office of this Paper.

ABORATORY and Warehouseman, 36, last 12 years with multiple shop company, seeks opening; first-class experience a stock-keeping, organising, making proprietary preparations, and buying; references undeniable. 178/4, Office of this Paper.

ANCASHIRE.—Salesman of ability with connection Wholesale, Retail and Shipping; Soaps and Perfumery, etc.; pen for offers. P.C.B. 41/28, Office of this Paper.

ORTHUMBERLAND, Cumberland, Westmorland, Durham, at present covered by keen salesman carrying world-renown ines, who desires change; age 28; first-class connection with hemist; only good houses need apply. 178/21, Office of this

UALIFIED (middle-aged), with wide experience, desires position in Wholesale or on executive staff of company; condon area; experienced in Retail, Wholesale and travelling. 79/8, Office of this Paper.

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THE NATIONAL UNION OF DRUG & CHEMICAL WORKERS
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Benefit—Free Use of Employment Bureau
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149 Newington Causeway, LONDON, S.E.1

REPRESENTATIVE desires re-engagement with good Drug or Sundries House; excellent connection provincial Chemists; also Doctors and Veterinary Surgeons. 178/27, Office of this Paper.

TO FIRMS OF REPUTE.—Advertiser, with well-established connection amongst the Chemists in the Northern Counties, can handle an additional line on commission basis; own car. "Alpha," 175/27, Office of this Paper.

WELL-CONNECTED gentleman, 30, desires re-engagement; London or Southern Counties, or both; own car; must be firm of repute; preferably Drug House, but not essential. Write S. C. Springett, "Penshurst," 353 Durnsford Road, Wimbledon, S.W.19.

YOUNG qualified Chemist (present owning a successful pharmacy) desires to represent a good firm for the Western Counties; not afraid of work; own car. "Worker," 178/20, Office of this Paper.

#### MISCELLANEOUS.

ONE Plate-glass Salesman, polished mahogany, bent front, 3 P.G. shelves, 5 ft. 8 in. high, 2 ft. 6 in. wide, 2 ft. deep; one Plate-glass Salesman, 3 P.G. shelves, 6 ft. high, 2 ft. x 23 in.; one Salesman, 2 P.G. shelves, 3 ft. high, 2 ft. x 23 in.; one all Plate-glass Counter, 4 ft. long, 3 ft. high, 2 ft. x 23 in. wide; one Plate-glass Shelf; Mahogany Dispensing Screen, 5 ft. long, 5 ft. 9 in. high; Counter Case, 5 ft. 6 in. long; low prices. George Cook, Chemists' Fitter, 27 Macclesfield Street, City Road, E.C.1

SECOND-HAND CHEMISTS' FITTINGS.—We have an exceptionally fine selection of these in all sizes; prices are right, and goods are in first-class condition; we shall be pleased to supply particulars and prices. Call or write, RUDDUCK & CO., 219 Old Street. London. E.C.1.

£65. —SECOND-HAND Set of Mahogany Fixtures, comprising 10-ft. Drng Run, 6-ft.-glass-fronted Connter, 6-ft. Chemist's Screen, 6-ft. Wall Showcase, Perfume Case and Deek, Check Till, 3-ft. bent Front Counter Case, Shop Rounds. FARLEY'S, 227 Old Street, London, E.C.1.

£87 10<sup>S.</sup> for set of Mahogany Fittings, consisting of 10 ft. Drug Run, fitted 30 glass knobbed and labelled drawers, 10 ft. glass-fronted Counter, 8 ft. Wallcase, 6 ft. Dispensing Screen, 3 ft. Connter Case, Perfumery Showcase and Desk, Cash Till; would separate. Illustrated list on request. E. BERG, LTD., 336 Old Street, E.C.1.

### Counter Case, 10 ft. Drug Fitting, 10 ft. Counter, 6 ft, Dispensing Screen, Perlume Case and Desk, bent plate-glass Counter Case, two nests of Counter Drawers. A large quantity of Chemists' Fittings and Cases of all sizes in stock. Full particulars, sketches and prices post free on application to PERCY R. E. JOSEPHS, 68 Old Street, 1-5 Tilney Court, and 125 Lever Street, London, E.C.1.

£170. -UNIQUE SET OF PHARMACY FITTINGS in solid Funed Oak, comprising 2 x 10 ft. Display and Stock Fittings, all with sliding doors; 2 x 5 ft. Pharmacy Fittings with drug drawers, etc.; these are all sectionalised; 4 x 4 ft. Wall Showcases with sliding doors; 2 full-sized Plate-glass Mirrors; Glass Front Serving Counter with drawers, etc., at back; exceptionally handsome Dispensing Screen; Check Fill. Really the finest looking set on the market, and ready for delivery and erection this day. Call and view. Can be adapted to any size shop. PHILIP JOSEPHS & SONS, LTD., 90/92 St. John Street, Clerkenwell, London, E.C.

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TWO CARBOYS, Counter, Drug Drawers, etc. "H. B.," 56
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driven. State lowest price, type, and condition. 176/1,

GARDNER RAPID SIFIER AND ALLAND, and condition. 176/1, driven. State lowest price, type, and condition. 176/1, Office of this Paper.

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